

COMPUTERWORLD

StorageTek Kodiak array sends a chill

By Craig Stedman

Storage Technology Corp. will introduce its second mainframe disk array early next month, industry sources said last week.

The 1.37-GBtodiak device is expected to be zippier in some applications and perhaps cheaper than leiberg. StorageTek's first big iron array.

Kodiak has nearly twice the capacity of leiberg and is based on less complex RAID technology, which means it lacks the advanced functionality built in to leiberg (see chart, page 148). The array will also provide more flexible configurations, ranging from high-performance boxes with large memory caches to capacity-oriented models with smaller caches and slower speeds, sources said.

However, StorageTek faces



some thorny positioning and pricing issues because Kodiak and leiberg use completely different architectures. Both arrays will continue to be developed, but several leiberg users briefed by StorageTek about Kodiak said they remain unsure how the two will coexist.

"It almost looks like they have

StorageTek, page 149

Sun brews up plan for Java to boost Unix use

By Jean S. Bozman
MOUNTAIN VIEW, CALIF.

Sun Microsystems, Inc., is gearing up to use its new Java technology as a shield for its Unix desktops, as Microsoft Corp.'s Windows 95 steamrolls through large corporations.

Sun Chief Executive Officer Scott McNealy told Computerworld last week that the \$5.9 billion firm plans to set up a business unit dedicated to the Java application development



Speak to me

Sun's Java, whose animated mascot is Duke (above), is an object-oriented language similar to C++. It lets users create platform-independent applications for the Internet and open systems networks.

ment technology. The unit is expected to be formally announced this fall.

"This is a Unix desktop play because now to run desktop applications, you don't have to run Microsoft," McNealy said.

Java will enable the creation of platform-independent middleware and applications that can be used by Windows, Macintosh and Unix workstations. While the technology is offered on the Internet as Sun, page 32

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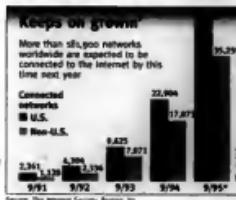
Internet hiccup

Overload snarls traffic, triggers call for more robust backbone structure

By Kim S. Nash and Bob Wallace

A "brownout" on the Internet last week slowed performance across the U.S. to a crawl. It was the first in what analysts warn could be a string of similar incidents caused by soaring use of the immensely popular worldwide network.

From about 11 a.m. to 2 p.m. EST last Tuesday, users trying to access sites on the World Wide Web and other Internet services were frustrated by long connect times or lost data. Netscape Communications Corp. support personnel and users said they faced waits of 40 minutes or more to get onto some Web sites — if they were able to connect at all.



Source: The Internet Security Service, Inc.

It is impossible to determine how many people were affected, but users and analysts estimated the number was likely in the millions.

Internet, page 76

Intel fights déjà vu

By Mindy Blodgett and Jalkumar Vijayan

The last-minute discovery of a minor design flaw in Intel Corp.'s upcoming 120-MHz Pentium chip for portable PCs has had a domino effect, delaying the high-performance notebook announcements of several vendors including Toshiba America Information Systems, Inc.

Intel last week confirmed the flaw. The chip, which was slated for announcement and shipment next week, will now ship after mid-October.

Intel maintained that the design problem, which caused the chip to malfunction at low voltages, has already been corrected. The delay is due to Intel's need to ramp up the reworked chip.

"The problem is now behind us," said a spokeswoman for the company, although she conceded that "obviously it should have been discovered sooner rather than later."

Still, by catching the chip problem and delaying

Pentium flaw

Win 95 bests OS/2 Warp

Microsoft product easier to configure and use

By Tim Trimble
Special to Computerworld

With the massive Microsoft Corp. media blitz for Windows 95 and the relative whisper that accompanied the release of IBM's OS/2 Warp 3.0, one must ask, "Does OS/2 match up to Win 95, regardless of the media blitz?"

In an attempt to answer that question, I did what every information systems analyst should do: I evaluated both products. In the process, I derived the accompanying list of features and measured each one on a scale of 1 to 4 stars, with 4 stars being the best. On

average, Windows 95 came out ahead (see chart, page 48).

Bundled products

OS/2 comes with Lotus Development Corp.'s Notes Express, Internet connectivity, Remote LAN Access and IBM Works, which is a package of personal productivity tools and a personal information manager that sells for \$129.95. For new Windows users, Windows 95 doesn't include Internet connectivity, remote access or personal productivity tools. The Microsoft Plus package, which includes those features, costs an additional \$44.95. Upgrades from Windows 3.1 to Windows 95 cost about \$60.

Win 95 vs. OS/2, page 45



News

- 1 **Pentium servers** AT&T GTS will come out with an entirely new line of Pentium-based servers later this month.
- 2 **Networking control** 3Com will announce a new module that enables users to control its entire ATM switch line.

- 3 **Taligent shake-up** Several key executives, including the company's CEO, Joe Guglielmi, have left Taligent.

- 4 **GroupWise woes** Novell's GroupWise promises the world, but for right now users are having trouble implementing it.

- 5 **Networks Expo highlights** This week at Networks Expo, managers of NetWare networks can preview Windows-based client/server management tools.

- 6 **Internet ratings** The Nielsen Co., the folks who figure out how programs do in weekly TV ratings, plans to bring the same type of popularity measurements to the Web.

- 7 **Crunch time** The long-awaited opening of Cleveland's Rock and Roll Hall of Fame was tough on its two-person IT department.

OPINION

- 8 **Real-world benchmarking** Benchmarks are fine for what they are, Paul Gillin says, but the problem is that they don't reflect real-world conditions.

- 9 **Virtuality bites** Joseph Maglitta says the emergence of virtual sex programs are a reminder that some things are better done for real.

- 10 **Data warehousing** Patricia B. Seybold says data warehousing has become a marketing monster that can consume a lot of IS cash.

- 11 **LAN multiplication** Some network administrators are finding it cost-effective to simply multiply Ethernet segments, Charles Babcock says.



Is The Good Times virus on AOL? A hoax? Herpes? Take our Internet quiz and find out how plugged in you really are.

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Technical Sections

DESKTOP COMPUTING

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WORKGROUP COMPUTING

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AlliedSignal

ENTERPRISE NETWORKING

- 14 **MCI expands** MCI is making a concerted effort to move away from long-distance into areas such as on-line banking and Internet services.

- 15 **The Internet Page** Unauthorized commercial Web pages may be flattening, but they also raise legal issues.



Choice Cuts

70%

of IS organizations will adopt centers of excellence: Will these dedicated groups of IS specialists be your next excellent adventure or a circle of hell?

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Switching and routing vendors are making a mad dash to incorporate ATM, which boosts raw switching performance, into future products.

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LARGE SYSTEMS

- 16 **Data warehousing** The AS/400 is starting to take hold as a data warehousing system, with some early adopters putting warehouses alongside their mainframe AS/400s. But IBM still must capture the support of third-party tools vendors before it can begin a general warehousing push with the machine.



Customer service

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APPLICATION DEVELOPMENT

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New VisualGen

- 19 **IBM** released a new version of VisualGen that creates applications that run up to 10 times faster than those created with the old version.

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MARKETPLACE

- 23 **Product life cycles** Initial investment for routers and hubs is small compared with lifelong costs, but service and support contracts can minimize the damage.

Etc.

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AT&T Pentium servers to take MPP path

By Neal Weinberg

AT&T Global Information Solutions will replace its aging line of massively parallel processor (MPP) machines later this month with open, building-block style servers that users can stack to MPP proportions. Computerworld has learned.

The Dayton, Ohio-based company is scheduled to introduce its Intel Corp. Pentium-based WorldMark servers Sept. 27, the company confirmed last week.

Change of pace

WorldMark represents a major product shift for AT&T GIS, which analysts said has a dominant share of parallel processing accounts. Instead of releasing the long-anticipated 3700 MPP server

to replace the 3600 product line, the company is taking an entirely new path.

Gene Lee, an analyst at International Data Corp. in Mountain View, Calif., said an upgrade to the 3600 has been "way overdue." He said AT&T GIS has been losing customers to competitors because the old Teradata Corp.-based line has been showing its age.

AT&T GIS will take a modular approach by offering "a loosely coupled series" of symmetrical multiprocessing (SMP) servers that can be linked together to create an MPP system, said Paul McGuirk, an analyst at Gartner Group Inc., in Stamford, Conn.

Mark Davis, director of data management at Union Pacific Railroad in Omaha, said AT&T GIS is replacing the Teradata propri-

etary design in favor of an open architecture, or what the company is calling a "common node." Users can add CPUs, fast switches and storage devices to scale up as high as they want.

"I'm pretty excited," said Davis, who currently has 108 processors running in an MPP configuration. By unbundling the system and allowing the use of off-the-shelf components, Davis said he will be able to significantly cut his per-gigabyte cost.

The major challenge for AT&T GIS, he said, is to make the conversion costs attractive enough so customers will make the switch.

The technology isn't revolutionary, McGuirk added. "I see a lot of vendors coming out with SMP systems as building blocks for getting to MPP using loosely coupled

WorldMark powers up

The Pentium-based line

of WorldMark servers

will run AT&T GIS's

Teradata database

software and software

from major vendors

such as Oracle Corp.

The new system's

"sweet spot" is in the

market, analysts said,

will be in the eight- to

16-processor range,

and the boxes will likely

scale up to 32

processors. Users will

be able to link the

machines to scale

beyond 100 processors.

architectures."

But he said it was critical for AT&T GIS to "get it right." According to McGuirk, "The 3600, in my mind, has been plagued with problems," including the lack of software that runs on MPP systems and the difficulty in programming and managing the system.

But David Barrett, vice president of information technology at Invesco Funds Group, Inc., in Denver, said he has been pleased with his 3600, which he installed in 1992. "It's an extremely reliable box," he said.

Based on what he has seen so far, McGuirk said WorldMark appears to be an excellent, next-generation replacement for the 3600. But it has to be priced aggressively, something the firm has not been good at in the past, he added.

IBM PC Co. shuffles execs — again

By Jayakumar Vijayan

The abrupt departure of Jerome York as IBM's chief financial officer last week catapulted a little-known IBM executive into the top position at the troubled IBM PC Co.

Robert Stephenson became the third person in less than two years to take the helm of IBM's PC subsidiary. His newest president, Richard Thomas, was appointed to replace York as CFO.

Stephenson, a low-profile IBM executive who was previously general manager of IBM North America, has been with the company for 34 years.

"Hopefully, he doesn't have any pre-conceived notions on what this market is like" after spending all that time at IBM, said Carl Norman, a PC manager at Titleist and FootJoy in Fairhaven, Mass.

Stephenson takes charge at a time when the PC company's disastrous decline of a year ago, when it ran up a whopping \$1 billion operating loss, is showing signs of abating.

In the 18 months or so since Thomas took over, the PC operation stanched its flow of red ink, gained a much tighter grip on a runaway inventory problem and consolidated nine manufacturing and development sites into one site in Raleigh, N.C.

"Thomas was trying to fix something that was broken for a long time, and all he got was grief. But the hemorrhaging has stopped," said Bob Djordjevic, president of Annex Research in Phoenix.

IBM PC Co.'s problems then & now

- Cut operational costs and returned the company to profitability during the last two quarters.
- Consolidated nine manufacturing and development sites into one in Raleigh, N.C.
- Built a strong positive brand identity with the ThinkPad.
- Kept a lid on channel inventory.
- Built a desktop PC brand identity.
- Established channel partnerships and confidence.
- Defined a clear strategy for the PowerPC and OS/2 platforms.
- Defined a consumer market strategy.
- Consistently kept abreast of technology and price leaders.

For instance, though IBM slipped to the second spot behind Compaq Computer Corp. in worldwide sales for the first time last year, its performance over the past two quarters may have actually been profitably, said Richard Zweckenthaler, an analyst at International Data Corp. in Framingham, Mass. IBM doesn't break out financial figures for the PC company separately.

Portable police

IBM has made a strong push into the portables business, where its successful ThinkPad line of notebooks has led the company's comeback in the PC arena. Similarly, the company has become increasingly willing to substantially cut prices along with the rest of the industry. It is now poised to introduce brand-new lines of leading-edge Intel Corp. Pentium- and P6-based desktop PCs for home and commercial markets.

"There was a whole series of difficult choices we have had to make... but today — in terms of costs, in terms of mar-

gins — our business is much more financially competitive," Thomas said.

Still, a lot remains to be done, observers said.

"The company still needs to create a strong desktop PC brand identity comparable to the ThinkPad. They need to quickly and consistently advance the state of their art and technology and prove to their customers and their channel partners that they are as formidable a player as any," Zweckenthaler said.

Albeit for IBM will be the company's challenge to keep pace with both the high-margin PC server and workstation market at the high end and the booming but

logistically taxing consumer market at the low end.

The company also clearly needs to define its strategy for PowerPC and OS/2. IBM has been sending mixed signals to the market about what it plans to do with either platform, and this will end up only confusing the market, analysts said.

IBM may have a tough time winning back customers such as Chad Pearson, vice president of systems at Godwin Books & Dickenson in Philadelphia.

"I don't know what would make me go back to IBM again, unless at some point, IBM became much cheaper with the same qualities and capabilities" that other PC vendors offer today, he said.

 **Reliance pulled from 05/5 to steer soft-war strategy.** See page 149.

Wall Street whines but doesn't worry

Wall Street wailed a bit last week when Jerome York walked out on his job as CFO at IBM. But the financial community wasn't too worried that IBM's earnings recovery would be sidetracked by the departure of bad-boy slasher York.

"We're going to miss him," said Gary Helman, an analyst at Salomon Brothers Inc. in Stamford, Conn. "York may not have been well-loved within IBM, but he certainly got to the heart of the matter. He was unusual about making [expense reductions] happen."

But Helman said he doesn't expect York's replacement, Richard Thomas, to "kut up everything" by tie-

ing with the cost-cutting strategy.

York also strengthened IBM's balance sheet and built up cash holdings that should still be in the \$7 billion range despite the recent purchase of Lotus Development Corp.

The choice of Thomas as York's replacement is "a little puzzling" since the former IBM PC Co. general manager hasn't had a finance job in a decade, said William Milne Jr., an analyst at Brown Brothers Harriman, Inc. in New York.

But Milne and other IBM watchers said the computer giant now faces a more challenging — and hard-to-gees revenue growths, as well as one that doesn't much involve a CFO.

— Craig Stedman



PC Co. President
Robert Stephenson has been named CFO at IBM

locations

industry. It is now poised to introduce brand-new lines of leading-edge Intel Corp. Pentium- and P6-based desktop PCs for home and commercial markets.

"There was a whole series of difficult choices we have had to make... but today — in terms of costs, in terms of mar-

Database Performance

The TPC-C™ test is the industry standard benchmark measuring database On-Line Transaction Processing (OLTP) performance. On July 24, 1995, Hewlett-Packard published an audited TPC-C benchmark of Oracle7 that set the record for open systems performance, beating Sybase System 10's best result on any computer by more than 200%. (It's almost not worth mentioning, but we also creamed Informix.)



Sybase's CEO recognizes they have technology and performance problems. So should you.

"We were slow to realize this [scalability] was an issue in the marketplace."

Mark Holloman, Sybase CEO, *The Wall Street Journal*, April 14, 1995

"We're trying to investigate the problems now. You peel back the onion, you find out more stuff."

Mark Holloman, Sybase CEO, *San Francisco Chronicle*, April 5, 1995

Experts and customers recognize that Sybase's problems will take a long time to fix. So should you.

"The time between major enhancements of their [Sybase's] database is the longest of any major vendor."

Salomon Brothers, *Computerworld*, April 17, 1995

"They've got a lot of work to do and they have to go pretty deep in the core of the code."

Fast Albany, *Information Week*, April 17, 1995

Scalability and parallelism make Oracle7 the technology and performance leader. The results of the HP TPC-C benchmark provide graphic proof.

"Oracle has set the high water mark for open systems platforms. We look for more to come."

Jim Johnson, Chairman, Standard Group, July 24, 1995

"Oracle's TPC-C numbers dramatically alter the competitive landscape...Oracle is telling the competition to put up or shut-up."

Peter Kastner, Vice President, *Aberdeen Group*, July 24, 1995

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3Com preps ATM net management package

By Bob Wallace

3Com Corp. will soon announce a new software module that will enable users for the first time to manage the networking giant's entire line of Asynchronous Transfer Mode (ATM) products.

The module, for 3Com's Transcend network management package, is already used at a handful of 3Com sites and could be generally available by month's end, Kathy Roche, Transcend product line manager at 3Com, told *Computerworld* in an exclusive interview.

3Com outlined plans for a plethora of ATM products and add-ons as part of its wide-sweeping and long-term ATM direction, which it detailed for users and analysts much earlier this year.

Early ATM users say ATM management has been an Achilles' heel. Vendors have typically rushed to market hardware that is missing management features. Also, some vendors offer packages only for a subset of their ATM products.

Addressing the problems

"The lack of ATM management would be a long-term concern for us, but [3Com] offering this management package would definitely address that," said Steve Lopez, a network manager at the National Board of

Medical Examiners in Philadelphia, a long-time 3Com customer. "It'd let us get into the boxes and make troubleshooting much easier."

Roche said the new module will manage 3Com's homegrown ATM products, as well as ATM switches from 3Com acquisition NicemCom, Inc. Current Transcend users will get the module as a free upgrade, but pricing for new users was not available.

The new product indicates 3Com is taking ATM seriously.

"This puts 3Com up at the front of the pack," said Chris Heckart, director of broadband marketing at TeleChoice, Inc., a Vernon, N.J., consulting and research firm. Heckart noted, though, that Fores Systems, Inc. already offers users the same type of package.

In addition to enabling users to manage the NicemCom switches, the Transcend package will provide



"We're working on ATM capabilities for [3Com's] LANplex 6000 central core LAN switches because we've got six of those that anchor our network. We have a pretty sizable investment in these boxes and see them as a very strong product."

Steve Lopez, network manager, National Board of Medical Examiners

one plan for supporting virtual LANs, which are logical rather than physical LANs.

3Com already offers Enterprise Manager for UNIX, a package for creating and managing virtual LANs. However, Roche said Transcend will supersede that package by offering support for a wide range of ATM wares.

"We think ATM is the optimal technology for supporting virtual LANs and fully intend to extend VLANs back to include many of our existing [products]," Roche said.

Works with the Big 8

Today, Transcend manages the vendor's LANplex switches, FMS stackable hubs and NetBuilder routers. It runs on Hewlett-Packard Co.'s OpenView, Sun Microsystems' SunNet Manager and IBM's NetView for AX.

The latest version will add support for NicemCom's NicCell 2000 — renamed Celplex 7000 — a four-slot ATM switch that can be equipped with four-port hot-swappable interface cards.

It will also support what was originally called the NicCell 200, a 16-port Ethernet-to-ATM workgroup switch renamed LinkSwitch 2700.

Users turn to Web for Win 95 help

After fielding scores of complaints that Windows 95 support was hard to find on the first weekend after the product's launch, Microsoft Corp.'s support group is happy with the results of its second weekend under the gun.

When the Redmond, Wash., desktop giant beefed up its support staff in a program dubbed "Operation Win Weekend," the average call wait dropped to 20 seconds, a Microsoft spokeswoman said last week.

She said calls about problems with a virus infecting installation diskette No. 2 during setup [CW, Sept. 4] have slowed down since the company published ways to avoid the virus, which she said was pre-existing on users' PCs.

However, more and more users are going straight to on-line resources for answers to their questions. The spokeswoman said about 270,000 hits had been recorded on Microsoft's Windows 95 support World Wide Web page (<http://www.microsoft.com>).

— Tim Ouellette

Transarc takes object view

By Steve Moore

Transarc Corp. this week is expected to unveil a new version of its client/server on-line transaction processing (OLTP) monitor, Encina 2.0, that promises to streamline application development efforts for corporate users.

Sources said a key component in Encina 2.0 will be Encina+++, a distributed object development environment. Transarc's move to object technology should increase the speed and efficiency with which Encina users can develop OLTP applications, analysts said. It should also give Encina an edge over competing OLTP monitors such as Novel, Inc.'s Tuxedo and AT&T Corp.'s TapEnd, they said.

Other Encina 2.0 improvements increase the speed of application development work by supporting more efficient processing and queuing of data.

Encina+++, for example, manages client/server transactions in distributed networks.

ture," said Angela Hey, an analyst at Input, Inc. in Mountain View, Calif.

While large OLTP systems traditionally have been mainframe-based, "users shouldn't be as frightened as they were in the past of integrating transaction processing systems across multiple platforms," Hey said.

If Transarc can accomplish the use of modularity and reusability of software components within OLTP [applications], "they will address some of the largest development time and cost risks — and ongoing support risks — associated with on-line transaction processing," said Tom Neale, president of CMM Corp. in Voorhees, N.J.

It is unclear whether Encina 2.0 can handle high-end transaction processing environments such as those found in air-lines or large commercial banks — nearly all of which are IBM mainframe shops, said

of Encina 2.0 but were cautious about assessing its potential benefits.

"We want to see this layering of object technology and [Distributed Computing Environment] happen, and we know that Encina is great technology and could

probably fix some business problems," said Michael Danley, a distributed computing specialist in the corporate computer services group at Motorola, Inc. in Scottsdale, Ariz.

However, Motorola currently doesn't use Encina. The firm comprises multiple groups with their own information systems architects, "we have to find a match for customers internally who are trying OLTP systems and encourage them to build on this [Encina] platform," Danley said.

US West, Inc. in Denver uses Encina, but the 2.0 version "is probably not of interest for the projects we are working on now," said Ed Waco, a technical staff associate of the telecommunications service provider. "Strategically, overall, it probably is of interest just because we're seeing a lot more object-oriented design and programming going on."

As object standards such as the Common Object Request Broker Architecture (CORBA) mature, Transarc "will sup-

port whatever is prevalent" in Encina, said Alfred Spector, Transarc's CEO. "Encina++ provides an object-oriented programming environment on a mature software base," he said.

Senior editors Jean S. Burman and Frank Hayes contributed to this story.

Corrections

The graphic that appeared with "Novadigm expands platforms" [CW, June 19] stated incorrectly that Novadigm, Inc.'s Enterprise Desktop Manager (EDM) "Runs on Sun Solaris (previously ran only on MVS). By year's end, will support HP-UX, IBM AIX, OS/2, Microsoft's Windows 95 and Windows NT." In fact, the EDM management repository can be stored in IBM's MVS or Sun Microsystems, Inc.'s Solaris. Both versions fully support a number of client/server/client platforms.

Also, the story titled "Novadigm synchronizes client/server deployment" [CW, June 5] incorrectly stated that list prices for EDM start at \$100 per client; \$100 is the fully discounted price for "enterprise quantities." Prices start at \$200.

CEO exits, Telligent future unclear

Departing execs, strategy shuffles raise eyebrows

By Lisa Picarille

Last week's unexpected resignation of Joe Guglielmi, Telligent, Inc.'s chairman and chief executive officer, has industry watchers wondering about the future of the Cupertino, Calif., object-oriented application tools developer. The resignation closely follows the recent departures of two other key executives.

Guglielmi left Telligent last week to become corporate vice president at Motorola, Inc. and general manager of the Motorola Computer Group in Tempe, Ariz. Prior to joining Telligent, Guglielmi spent more than 30 years in various executive positions at IBM.

"Joe's leaving is a bit of a surprise," said Adriana Bowles, an analyst at Atelier Research, a market research firm in Westport, Conn. Bowles was briefed by Telligent. "But it's a reasonable time in the life cycle of the company. Now they need to shift gears and do some serious marketing and sales."

Sources close to Telligent estimate that its investors—IBM, Apple Computer, Inc. and Hewlett-Packard Co.—have already spent in excess of \$100 million on the 3½-year-old firm. Telligent has been relatively low-key to date. It finally delivered in July its first product, CommonPoint 1.0, an object-oriented application development tool.

Operating system

The joint venture had previously scrapped ambitious plans to deliver a hardware-independent, object-oriented operating system. The company now claims its charter is to deliver an operating-system-independent software environment that supports the creation and deployment of distributed applications.

Sources inside Telligent said it is unclear how committed Apple is to continued investment in the joint venture because Apple's next-generation operating system is based on OpenDoc, a component-based architecture.

While Telligent insiders said Guglielmi's move is not necessarily indicative of problems at Telligent, it amplifies concerns because it comes on the heels of two other departures: Stratton Staljovs, Telligent's vice president of marketing, left two months ago, and Randy Livingston, its chief financial officer, resigned two weeks ago.

Guglielmi said his move was just natural timing. "I took a technology team and

got them to a product team. Now seemed like the time to turn it over to a new set of leaders," he said.

Dick Guarino was named acting CEO of Telligent. Guarino, who is currently general manager of the Software Develop-

ment and Personal Systems Business Segment Power Personal Systems Division at IBM, was part of the team that orchestrated the Apple/IBM alliance. Also a former Telligent board member, Guarino will head up the search for a new CEO.

At least one analyst said the Telligent exodus is not a good sign and that, so far,

Telligent has not lived up to expectations. "Time is passing them by," said Chris Le Toog, president of SoftTracks Software Research in Los Altos, Calif. "Especially in a world in which Windows NT and Windows 95 are taking great strides. Time to market is everything, and Telligent has a long way to go."



Joe Guglielmi, former Telligent chairman and CEO, says more was just a matter of natural timing

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**INNOVATION
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GroupWise snafus irk users

Messaging software stumbles at some sites, delays deployments

By Suruchi Mohan

Some users looking to become more efficient by using Novell, Inc.'s GroupWise messaging product are feeling uneven when their electronic mail disappears.

This is only one of the problems GroupWise 4.1 users face. For some, the implementation has been so difficult that it has been postponed.

One such site is Indiana University in Bloomington. It had planned to roll out GroupWise 4.1 to more than 30,000 users but stopped after running into problems with just 3,000 of them.

Novell acknowledges some of the problems, but a company spokesman said he didn't think they obstruct the implementation of GroupWise in any significant way. He added that GroupWise XTD—the client/server version of the product—is expected to solve many of these problems. Novell is due to ship GroupWise XTD by the end of the first quarter of next year.

But users are concerned about the preseet.

"There are problems with database corruption," said Lance Speculon, a network analyst at Indiana University. "Users come in one day and can't see mail from the day before."

Running Ocheck, an administration utility, doesn't always help and can even exacerbate the problem: "If you run Ocheck on the whole database, it can create the problem, so users can't see their messages," Speculon explained.

Another user at a large site of more than 30,000 users agreed. That site also put its GroupWise 4.1 implementation project on hold. If administrators enter a database in fix a corrupt mailbox, they sometimes have to rebuild as much as half of the database.

Errors persist
In addition, using the Rebuild utility will move all messages, including deleted ones, into a user's in-box. And if a user happens to be a member of a 50-person group, for example, he would receive 50 copies of the message.

The Novell spokesman said the issue would be a configuration problem. But the user, who asked not to be identified, said Novell technicians had already checked the configuration and said it looked fine.

Novell said it hasn't received a large

volume of complaints about its database and considers it a solid product.

Some GroupWise users interviewed last week also complained that the calendaring/scheduling feature doesn't work as well as it does in the Macintosh version. A Novell spokesman denied that. He said since calendaring/scheduling is an integral part of E-mail, if one works, so should the other.

"Technically, they're correct," said another user who asked not to be identified. But in practice, the schedule disappears from the calendar. It does show up as an E-mail message, but that defeats the purpose of the feature. The user said Novell has promised that this problem will be fixed in its upcoming GroupWise XTD.

The lack of management tools in GroupWise also puts administrators in a tough spot. Users can create rules that the administrator can't view or disable except by logging in as the user and changing the password, for example. Speculon said this also means that if a message isn't delivered, the administrator can't open and view problem messages in binary format and forward them manually.

Novell responded that the whole idea of rules was to let end users decide what to do with their messages. And users don't like administrators having access to their private messages.

Vendors test collaborative computing efforts. See page 56.

Room for improvement

Biggest weaknesses in GroupWise, Exchange and CC-Mail/Notes
Migration and backward compatibility availability, cross-platform client functionality and server support, proprietary security, proprietary directory.

Source: Report Communications, Inc., Chicago

News Shorts

America Online girds against hacker break-ins

America Online has asked users to regularly change their passwords as one measure to guard against "ongoing" security breaches at the Vienna, Va.-based on-line service, a company spokeswoman confirmed last week. One or more hackers have created a program called AOLhell that has been trying to invade files of America Online members and staff "for several months," the spokeswoman said. "We're not going to provide specifics because that would jeopardize our members," she said. America Online has installed new security software to help counteract the invasions, she said.

Novell to keep Unix control

A Novell, Inc. executive last week disclosed reports that the firm is negotiating with Hewlett-Packard Co. to give up some control over Novell's Unix System 5.4 source code. However, Don McGovern, vice president of Novell's operating systems division, didn't rule out the possibility of a deal that would allow HP to prepay its royalties on Unix 5.x. That is something Sun Microsystems, Inc. did in a March 1994 deal for \$82.5 million. McGovern said some industry observers may have misinterpreted Novell's close collaboration with HP and Intel Corp. on a recent 64-bit application-interface initiative [CW, Aug 21].

Feds call for digital copyright

The U.S. Department of Commerce last week released a task force report stating that U.S. copyright law needs minor updates to protect the rights of digital publishers on the information superhighway. The report on intellectual property rights said publishers will be wary of putting digital content on the Internet unless the copyright law is fine-tuned to treat unauthorized transmission of copyrighted material the same as it does unauthorized copying.

Netscape bug fix ready

Netscape Communications Corp. will this week ship a much-awaited bug

patch for the Microsoft Corp. Windows NT version of its Commerce Web server, a company spokesman confirmed. The patch was due out last month. Separately, the Mountain View, Calif.-based firm quietly started a discount swap program last week. Users can trade in non-Netscape Web servers until Oct. 31 for discounts on Netscape's Unix-based Commerce and Communications servers. Pricing would drop from \$1,495 to \$795 on Communications servers and from \$5,000 to \$2,995 on Commerce servers.

ThinkPad puts on a new cap

IBM PC Co. is fixing a dirty little problem with its ThinkPad notebooks. It seems some of the red rubber caps that form part of IBM's TrackPoint B integrated pointing device contain too much sulfur, which can corrode the wiring under the TrackPoint. While the problem seems limited to one batch of rubber used in the now-discontinued ThinkPad 750, IBM is offering all TrackPoint II users a free upgrade to TrackPoint III. Call (800) 523-6765 for more information.

Report: No rush to buy 'Big 3' messaging gear

In the first research report to compare the upcoming products from the "Big 3" in messaging—Novell's GroupWise, Microsoft Corp.'s Exchange and Lotus Development Corp.'s CC Mail/Notes—the key pieces of advice for users was simple.

"Don't rush to buy any of them."

The report, to be published by Report Communications in Cincinnati by month's end, examined the three most hyped messaging/collaborative computing products and found they had more similarities than differences.

None of the three products are generally available now, but they are expected to ship by year's end or the first quarter of next year.

The report said the three run neck and neck in most areas. The similarities include the following:

- All offer proprietary security.
- All offer proprietary directory services.

"We will do nothing 'til spring. Let somebody else find the disastrous bug," said Morgan McKinley, senior systems engineer at Pacific Mutual Life Insurance Co. in Newport Beach, Calif. "Microsoft has hinted that Microsoft Mail is in its present form is the end of the road, and Exchange is the next step. Anytime a vendor does that, it is a good time to step back and take a look."

—Suruchi Mohan

Texaco goes outside for help

Texaco, Inc. outsourced help desk operations and desktop and LAN support for up to 15,000 users. Texaco gave the job to Integrated Systems Solutions Corp. (ISSC), IBM's outsourcing unit. The companies did not disclose the value of the five-year deal. ISSC will initially support four Texaco facilities in New York, Texas, California and Oklahoma. Plans to shift help desk and PC support functions at other domestic locations should be completed later this year, ISSC said.

Intel wins \$45M DOE contract

Intel Corp.'s supercomputer division won a \$45 million contract from the Department of Energy to build a massively parallel system linking 9,000 of the company's upcoming P6 microprocessors. The machine is supposed to perform more than a trillion operations per second, that would make it the fastest supercomputer built so far. The application it will be used for includes simulations of nuclear weapons testing, the government said. Intel's existing supercomputers are based on its ill-used i860 RISC chip.



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Boeing Takes Off With The Flying Dutchmen



The Boeing Commercial Airplane Group took off with the 777 this year; they also took off with the Baan Company. About to make a major process redesign commitment, they invited in "The Flying Dutchmen" from Baan Company. The result: Boeing placed an initial order valued at \$20 million for Baan's TRITON family of client-server finance, manufacturing, distribution, transportation, service and project management applications.

If you are about to make an ERP decision, Baan's Flying Dutchmen would be delighted to introduce you to a significantly new perspective. One shared by ABB, Hitachi, Mercedes-Benz, Philips, Snap-On Tools and...oh yes...by Boeing. The worst that can happen is that you'll get a free hat commemorating Boeing's taking off with Baan. Call Baan at 800-889-9818, ext. 1001. Then clear a landing spot, along with some time on your calendar.



Baan

The Flying Dutchmen

NetWare tool opens Windows on clients, servers

By Patrick Dryden
AUSTIN, TEXAS

NetWare LAN administrators frustrated by complicated or nonexistent tools for monitoring client/server activity and analyzing performance trends can take heart: Next month, Avanti Technology,

Inc. will ship two products that beta testers say meet their needs in this arena.

Avanti will ship Windows-console versions of its Novell, Inc. NetWare Loadable Module management software that streamlines tasks ranging from controlling files

and user connections to spotting performance bottlenecks — including bothersome game players and World Wide Web browsers.

Users say such functions are awkward or missing entirely with current utilities from Novell and other

vendors. Beta testers here claim Avanti's tools are indispensable to running their networks.

"Using NetWare utilities for some client and connection management is painstaking, and Novell still hasn't delivered the trends analysis tools they've been demonstrating," said David Day, systems support specialist at Intermedics Orthopedics, Inc., a manufacturer for the medical industry.

Avanti will preview the products this week at Networks Expo and in two weeks at Network/Interop '95.

NodeInfo 2.0 for Windows identifies clients by connection and by files held open or locked on multiple servers. Operators can clear file locks or close open files without terminating client connections to fix application problems or initiate backups, for example.

NCosole 2.2

for Windows tracks more than 300 network performance statistics on LAN segments and across backbone for one or more servers.

This helps identify trends and bottlenecks to maintain healthy networks or plan capacity changes.

"No other product helps us examine file and user activity as fully as NodeInfo. We use it on a daily basis to track the deadly embrace of an ill-behaved database," said Marian Staszay, network systems administrator at Austin/Trauma County Mental Health & Mental Retardation, a support agency with seven LANs and numerous remote users at 60 sites.

Easy comparison

The Windows versions provide context-sensitive help about the management tool and displayed NetWare information and can show screens side by side for comparison, Day said. "Now I can quickly check out multiprotocol clients that typically log in to at least four servers," he added.

Several network managers praised the tools for helping them discover which users generate lots of traffic without server access by playing games such as Doom or browsing the Internet through a gateway, said Steve Meyer, president of Avant, which is based here.

NodeInfo 2.0 for Windows costs \$195 for the first server, NCosole 2.2 for Windows costs \$295 for the first server or \$395 with an agent for reporting via the Simple Network Management Protocol.

 A Texas supplier gets client/server right on the second try. See page 55.

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Keeping client/server environments in balance so your applications don't take a dive.

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Women, Power and Activism are associated with university and CA. Other Titles of Document: *Gender and Power 2010/2011*, are published by University of Mississauga.

Nielsen takes on Web

TV ratings giant buys into firm that measures Web traffic

By Kim S. Nash

Nielsen Media Research, the folks who figure out how well *Home Improvement* does against *Primer* in weekly television ratings, announced just last week to bring the same type of popularity measurements to the World Wide Web.

Nielsen bought an undisclosed equity stake in San Francisco-based Internet Profiles Corp. (IPro), an early leader among firms that audit Web site traffic. The companies plan to add more measurement criteria to IPro's services and redesign the firm's reports for easier interpretation.

The Nielsen name "puts a lot of credibility behind us," said Ariel Poler, president of 15-month-old IPro. Nielsen is a division of The Don & Bradstreet Corp. in New York.

That's the ticket

A solid handle on Web site traffic can uncover the value of going online. By measuring the flow of visitors to its site, for example, TicketMaster was able to prove that its Web site is saving the company money.

The Los Angeles-based ticket agency already knew that four out of the five telephone calls it receives every day are from people looking for information about shows and events — rather than from customers actually buying tickets, said Bill Perkins, vice president of on-line services at TicketMaster.

Meanwhile, users who access the firm's 7-month-old Web site spend an average of 6% to 7% minutes there. That's roughly half the amount of time phone callers spend with TicketMaster operations, Perkins said.

Not only is the company saving phone operators personnel costs, but "we assume [Web visitors are] getting the information they want faster than by dealing with live human beings," he added.

IPro is on a roll. The firm announced late last month that Microsoft Corp. has enlisted IPro to measure activity on its Windows 95 World Wide Web pages.

Chrysler Corp., Netscape Communications Corp., Playboy Enterprises, Inc. and Time, Inc. New Media are also among IPro's 50 customers.

What gets measured

IPro measures visit rates to Web sites with an internally developed software program that tags users as they visit a site. The firm also counts the number of hits a site gets as well as the different IP addresses of users. Then it runs the data through proprietary algorithms that estimate traffic rates.

Tracking usage is also crucial for good Web site management, said Randy Prudhol, digital production manager and webmaster at Chas/Day, Inc., an advertising firm in Venice, Calif.

An information systems manager can't accurately dole out staff and equipment to manage and improve a site without some idea of how many people access and use the location, Prudhol said.

For example, by analyzing "traffic patterns, you can review your Web site to make the pages easy to get around," he explained.

Unauthorized Web sites, new Web security products and the Web for Cobol programmers. It's all on the internet page. See page 68.

Unauthorized Web sites, new Web security products and the Web for Cobol programmers. It's all on the internet page. See page 68.

Clone problems still daunt Apple

By Lisa Piemonte

Apple Computer, Inc. could learn a lesson from the movie *Jurassic Park* — cloning and control don't go hand in hand.

Sources inside the Cupertino, Calif., computer maker said Apple is struggling to reconcile its decision to license the long-proprietary Macintosh operating system with the harsh reality that Macintosh clones mean Apple can no longer control the market.

This dilemma has led Apple to mix several licensing deals with major manufacturers. Jim Gable, director of Mac OS licensing at Apple, admitted the company has turned down potential licensees. And sources inside Apple said it recently declined a deal that would enable PC clone maker Gateway 2000, Inc. to expand its repertoire into the Macintosh market.

"Turning down a company in the position of Gateway is a big mistake on Apple's part," said Peter Hartsook, editor of "The Hartsook Letter," an industry newsletter in Alameda, Calif.

Exclusive club

Earlier this year, Apple said no to a deal with Acer America, Inc., another PC clone vendor. Separately, several Taiwanese PC vendors recently claimed Apple rejected their offers to license the Mac OS, sources close to Apple said. [CW, July 16].

To date, Apple has announced just four licensees of the Mac OS: Radius, Inc., DayStar Digital, Inc., Power Computing Corp. and Pioneer Electronics Corp.

However, Gable said adequately

supporting even its current crop of licensees has been a bigger task than Apple originally anticipated. He said Apple expects to take on more licensees when the specifications for the Common Reference Hardware Platform (CRHP), which was jointly developed with IBM, comes out. Parts of the current ver-

<p>On the list</p> <ul style="list-style-type: none"> •DayStar •Power Electronics •Power Computing •Radius <p>Signed Mac OS licensees (not announced)</p> <ul style="list-style-type: none"> •Acer Computer •DayStar Technology •Ring C. Olivetti Co.

sion of Apple's operating system such as the Mac Toolbox now reside in the hardware. With the CRHP machines, the operating system will be divorced from the hardware. This means that vendors that want to deviate from Apple's Macintosh design will require less support, Gable said.

According to Hartsook, "Apple's excuse is that it needs more staff to accommodate Gateway or any other Top 10 player, then they should staff up. It would be just nuts to turn down that kind of company if you're serious about licensing. You can't just have niche players like Radius and DayStar that are virtually in your pocket, and Power Computing, which is a start-up. You have to bring in Top 10 players even if at first they cannibalize your sales by lowering prices or innovating on the hardware."

DEC tests NT-based net management

By Patrick Dryden

Digital Computer Corp. last week launched a broad field test of its Microsoft Corp. Windows NT-based network and systems management software, which is due to ship in October.

Digital and other vendors, including Cabotron Systems, Inc. in Rochester, N.H., are releasing NT products they hope will appeal to network administrators seeking cheaper, simpler alternatives to Unix-based management platforms.

Traditionally, users looking for robust, enterprise-wide network management turned to Unix because they had no other choices.

Digital beta-tester David Greenberg,

chief executive officer at Vistech Corp., expects to see the NT management suite. "We held off for management consistent with our Microsoft BackOffice platform of NT servers," Greenberg said. Vistech, a health care information services provider in Orlando, Fla., operates a metropolitan network that links more than 1,000 nodes at 14 sites. "I'll be damned if I'm going to buy a Unix workstation to manage it all," he said.

Evaluate it

Digital has ported Polycenter Manager on NetView — its expanded version of IBM's Unix-based software — to run on Windows NT PCs. Digital expects this module to ship more than 10,000 free evaluation copies to users, vendor partners

and others. Limited beta testing started last spring.

The evaluation copies will include descriptions of network and systems management tools from 11 vendors. The tools will integrate with Polycenter when the product ships.

Allegro Logic Corp. has already scrapped SunSoft, Inc.'s Unix-based SunNet Manager and Unix-based router management software in favor of PC tools that require less training and daily maintenance overhead, said Rich Sanger, telecommunications manager at the Pittsburgh specialty semiconductor.

The Texas Department of Human Services in Austin will stick with its investment in SunNet Manager and Hewlett-Packard Co.'s OpenView, said David

Freeland, director of telecommunications in MIS. Network operators' agency headquarters "are tuned to these management tools" for monitoring more than 725 WAN links, 500 LANs and 20,000 stations, Freeland said. Still, there may be room for the less expensive Windows tools in field offices, he added. "Cost is the biggest attraction because the PC is a much cheaper platform than Unix boxes."

Other vendors are also jumping to meet NT demand. Cabotron is testing a Windows NT version of its Spectrum enterprise management software. Delivery is scheduled for early next year.

IBM remains aloof to NT, promoting an OS/2 version of its SystemsView integrated management console. To be delivered late this year, the OS/2 product will support NetView for networks and a suite of systems management applications.



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AST rides tech edge in bid to stop slide

By Jalkumar Vijayan

Former PC heavyweight AST Research, Inc. is hoping that its fall PC lineup will give it the punch it needs to stug its way back into the top tier of the commercial PC market.

Based on Intel Corp.'s Pentium chip, AST's Bravo MS series will offer voice recognition and command navigation, text-to-speech software that allows the computer to respond through speech, integrated virus-protection software, integrated 16-bit audio and aggressive pricing. For instance, a 133-MHz Pentium-based system with 16M bytes of RAM and a 130-MHz hard drive will cost \$2,750.

One of few

The lineup makes AST one of the few companies to announce a commercial desktop that integrates voice recognition and response. IBM hopes to ship a similar capability in its PowerPC desktops later this year, though prices on those systems are expected to top \$3,000.

Observers perceive the latest Bravos as an attempt by AST to reposition itself as a desktop technology leader. A series of seriously delayed product announcements forced the company to play catch-up with the rest of the industry most of last year.

The announcement comes at a time when AST has been desperately fighting to turn around a deeply troubled business with a series of initiatives, including layoffs, the shutdown of a manufacturing facility and senior management reorganizations.

However, according to Jim Schraith,

president and chief operating officer at AST, the company's ride along the technology curve will now feature more rapid product transitions and far shorter product life cycles.

"The key is getting to volume [manufacturing] very early in the product life cycle and then carefully managing the tail end of the product life cycle so that we don't get stuck with a lot of old products, like we did last year with the 486," Schraith said.

Working strategy

The company has already begun to move most of its manufacturing to a build-to-order model and has initiated just-in-time agreements with its key component suppliers, Schraith said. The company's recent alliance with Samsung Electronics Co. in South Korea, earlier this year gives AST a major source of components while infusing it with some much-needed cash [CW, Jan. 30].

"It's not a bad strategy for them because they are so heavy into the corporate market, which is generally a lot less price-sensitive than the consumer market," said Nathan Nuttal, an analyst at BIS Strategic Decisions in Norwell, Mass.

Some users agreed that buying leading-edge technology provides longer investment protection but questioned its applicability in corporate environments.

"As far as voice-operated commands in a business environment goes, definitely not," said Sean Gilbert, manager of information systems at Carderiver Interiors in Augsberg, Calif.

Hardware makers are charging to support Win95 users. See page 45.



AST President and CEO Jim Schraith says the firm will accelerate product deliveries

DEC refines software pitch

By Michael Goldberg

Slammed by critics during the past year for its lack of a clear software strategy, Digital Equipment Corp. last week rolled out a business unit aimed specifically at client/server and internetworking applications.

The Connectivity Software Business Unit will focus on meeting the user demand created by growth in the Internet and interest in Microsoft Corp.'s Windows NT for three-tiered client/server environments, said Robert Palmer, Digital's chief executive officer.

New software products will work with, but not depend on, Digital hardware. "We're selling software as a product to earn a profit and not to support our platform sales specifically," Palmer said. He will recruit an established software executive to lead the new business unit, he said.

The announcement of a new division should signal to users that Digital executives have finally solidified their vision for the future, said Tom McNamee, a former vice president of the Digital Equipment Computer Users Society and a senior industry analyst at Benchmarking Partners, Inc. in Cambridge, Mass.

"They're trying to develop a software business, and Digital has never succeeded in doing this before and generating revenues," McNamee said.

William D. Strecker, Digital's chief technology officer, said the firm would continue to support VMS-oriented products but could sell off some software lines to third parties as it has done in the past. Longtime Digital customer Jeffrey J. Killeen, president of Information Design and Management, Inc. in Shrewsbury, Mass., said he isn't worried about Digital's aban-

doning VMS applications. "Don't expect DEC to track every technology change out there in the market," Killeen said.

"As they develop new applications and technology, they will allow me to bridge to other operating systems" such as NT, he said.

"If you're a Fortune 100 customer, you should feel that Digital is... going to convince you that they have the technology that is needed to do three-tiered client/server and internetworking," Killeen said.

Company officials said the creation of the business unit puts more focus on the kinds of software products that Digital believes are important. The computer systems division will also continue to support other software products, such as those developed for its proprietary OpenVMS.

The business unit will expand on Digital's relationship with Microsoft by developing systems management programs to operate in NT environments.

CONNECT THE DOTS

Digital's Connectivity Software Business Unit will market seven categories of client/server and internetworking applications

CLIENT/SERVER APPLICATIONS

- Object-based application development: ObjectBroker with capability to integrate Microsoft OLE Version 2 with enterprise-wide system
- Enterprise messaging: Mailbox 200
- Systems management: Polycenter Network or Windows NT and Unix

INTERNETWORKING

- Workgroup collaboration: Workgroup Web Forum
- Communications: Internet directory server, mail storage
- Mobile connections: Digital Modem
- Security: Digital Firewall for Windows NT and Unix

*To be announced

Xylogics buyout to boost Bay in remote access

By Bob Wallace

Bay Networks, Inc. last week announced plans to acquire remote LAN access provider Xylogics, Inc. in a \$350 million bid to eventually offer users enterprise-wide LAN internetworks.

While Bay is the result of a merger between Network Communications, Inc. and SynOptics Communications, Inc., has focused on improving its switching hub and router lines, Xylogics made its name by offering packages that let mobile and remote users access centralized LANs.

Users are clear on the importance of remote LAN access and are excited about the deal because new Xylogics products use higher-speed links — inter-

grated Services Digital Network (ISDN) as opposed to dial-up — rather than those from myriad rivals.

"The first vendor to figure out how to pump the most data over affordable data lines will be the winner," said John Boyd, chief networking technologist at Northstar Utilities in Berlin, Conn., a Bay customer.

The acquisition, which could be completed in December, is the latest in a spate of buyouts by switching hub vendors of re-

lated LAN access firms.

Under the agreement, Burlington, Mass.-based Xylogics will become an independent operating unit of Bay. Xylogics management will remain the same and the company will continue to focus on the remote access market.

No changes

Officials stressed that no products or product lines would be phased out as a result of the deal, noting that Bay has already integrated Xylogics technology in its high-end System 5000 switching hub under an OEM agreement.

As far as product direction is concerned, Bay will continue to integrate Xylogics technology in its switching hubs and complete a release of the former's

Optivity network management package to cover Xylogics products.

The acquisition came as no surprise to analysts that track both markets.

"This move makes perfect sense because Bay needed low-end solutions, and Xylogics is a major player in the remote access industry," said Maribel Howard, a research analyst at International Data Corp., a Framingham, Mass., consulting and research firm.

"And it's a great deal for Xylogics, which gets access to Bay's direct sales force in complement its existing indirect channels," she said.

Separately, Xylogics announced remote access products that for the first time enable users with ISDN Basic Rate interface lines to access corporate LANs.

The products had their genesis with Scorpion Logic, which Xylogics bought in April.

SAP AG finds a friend in Microsoft

Developers agree to pitch each other's products, offer joint support to users

By Julia King

Client/server software darling SAP AG has teamed up with many partners over the past few years, but now it has a new best friend: desktop operating system kingpin Microsoft Corp.

That was the picture painted last week by company officials announcing the commercial availability of SAP's R/3 client/server applications for Microsoft's SQL Server 6.5 database.

The developers have agreed to pitch each other's products and offer customers joint support. Last week, SAP said it is training 150 consultants to implement R/3 software on SQL Server 6.5.

The \$64,000 question is why, because less than 15% of SAP's R/3 customer base has implemented Microsoft's Windows NT operating system — on which SQL Server runs.

Last week, analysts said the growing enmity between the vendors isn't likely to create any great rush for SQL Server or Windows NT. Rather, the deal should be viewed as a quid pro quo arrangement between two players looking to play on each other's market turf.

"Microsoft has been trying to form alliances with companies to give them enterprise credentials," said Ed Blazquez, a senior analyst at Aberturro Group, Inc. in Boston.

SAP, on the other hand, is looking to sell its enterprise business software further down the customer chain, according to Jeffrey Compert, an analyst at Gartner Group, Inc. in Stamford, Conn. Traditionally, SAP has sold primarily to firms with revenue of \$1 billion and up. About 85% of those run R/3 on Unix.

Midsize firms targeted

By porting R/3 applications to the less costly and lighter-weight SQL Server platform, SAP aims to make them more attractive to midsize companies with annual revenue of about \$500 million, Compert said.

That strategy worked at Applied Automation, Inc., a \$100 million manufacturer of chromatographs and flow measurement instruments used in the gas and oil industry and one of 11 companies participating in an R/3/SQL Server pilot project.

"The biggest reason we went with SQL Server is money," said Mark Mitchell, a systems analyst at the Bartlesville, Okla., company. By Mitchell's calculations, his company will save about 40%

in hardware and software costs by installing SQL Server over an Oracle Corp. relational database.

But on the operations side, Mitchell said there have been concerns about the robustness of both SQL Server and NT.

"But we felt that with Microsoft themselves implementing SAP [on SQL Server], it would be robust enough," he said.

Currently, six users are testing the system at Applied Automation. Their work so far has included customizing SAP's fi-

nancial, materials management and sales and distribution modules and running various reports, Mitchell said.

Microsoft's internal use of R/3 on SQL Server also went a long way in selling the same system setup to Pennzoil Products Marketing, a Houston-based division of \$2.5 billion Pennzoil Co.

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11

Oracle is tops

Gartner Group predicts heterogeneous databases will continue to flourish in client/server environments in the year 2000. Oracle will continue to lead the market, followed by Informix Software, Inc., IBM and Sybase, Inc.

at Gartner Group, Inc. in Stamford, Conn. Traditionally, SAP has sold primarily to firms with revenue of \$1 billion and up. About 85% of those run R/3 on Unix.

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Oracle 7.3 beta tops conference agenda

Pricing strategies, 'smart' databases key user interests

By Jean S. Bozman

Data warehousing will surface as a top priority for Oracle Corp. at least week's International Oracle Users Week user conference in Philadelphia. Key warehousing features, including parallel processing techniques, will be shown in beta release copies of Oracle 7.3, users and analysts said last week.

"If you have bigger and bigger databases, the database is going to be smart—or slow down if it uses the resources of the machine to process, crunch and get it through the door," said Michael Corry, president of the International Oracle User Group (IOUG) and executive vice president of Database Technologies Inc. in Newton, Mass.

But users said pricing of Oracle's products on client/server platforms will also be a top issue for them.

"Oracle has a long history of changing its pricing strategies, making some people happy and some unhappy—and then resorting to that the following year," said Mark W. Faraham, president of RightSizing Inc. in Lebanon, N.H. "I think the big issues coming out will revolve around the ease of upgrades."

Faraham said he expects Oracle to show free runtime pricing—a money-saver for large sites with hundreds of end users—for some developer's kit.

Industry analysts and users said Oracle's per-user pricing, which varies by platform, is confusing to some users.

"The cost per user is different on each platform," said Dan Kusnetzky, an ana-

lyst at International Data Corp. in Framingham, Mass. For example, workgroup prices may be pegged at \$600 to \$800, while enterprise versions start at \$800 to \$1,500. Media server versions cost even more, he said.

Some users said they want to know the pricing impact of moving applications from large hosts to a series of networked departmental servers.

Other IOUG highlights are expected to include the following:

Out in droves

This week's Oracle Application User Group user meeting in Washington is expected to draw 1,500 users, while next week's International Oracle User Group meeting in Philadelphia may draw more than 6,000 users, according to conference organizers.

• Multimedia extensions to Oracle 7.3, which is expected to ship by early 1996, will boost the use of Oracle databases in video servers.

• Internet World Wide Web support in Oracle's Power Objects development tool set, which features an easy-to-use graphical user interface similar to that of Microsoft Corp.'s Visual Basic.

• Demonstration of a 1-Tbyte Oracle database running on a high-end server, reportedly a Unix server from Hewlett-Packard Co.

Sprint customer in Japan who broadcast a message intended for the entire Internet community.

The transmission successfully passed Sprint's network routers. However, the message was blocked at an undetermined reason, once it hit routers at MCI Communications Corp., a spokesman for the telecommunications firm in Washington confirmed.

The rogue transmission created "a router anomaly" that was fixed "by adding filters" to the heavy-duty backbone routers, the MCI spokesman said.

Internet

CONTINUED FROM PAGE 1

One user, United Parcel Service, Inc., saw traffic to its Web site, which normally approaches 20,000 transactions per day, dip by 25% during the outage, said Josh Cohen, a webmaster at the Mahwah, N.J.-based package delivery company.

More to come?

Last week's incident could be a harbinger of more hiccups, analysts said.

"It was just a matter of time before this happened, and it's lucky that it wasn't much more severe," said Daniel Briere, president of TeleChoice, Inc., a Verona, N.J., consultancy. "Carriers and Internet service providers are selling users higher and higher speed links to the Internet, which means that there could be more—and more damaging—hiccupps."

A Sprint International spokeswoman said last week's trouble was traced to a

new Sprint customer in Japan who broadcast a message intended for the entire Internet community.

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Probes pick up steam

Network General app includes Remote Monitoring

By Patrick Dryden

Network General Corp. will lower the cost and extend the reach of its Foundation management tools this week in a move that will help administrators automatically monitor LAN segments throughout their networks.

PC-based Remote Monitoring (Rmon) probes now support up to four Ethernet or three Token Ring LANs, reducing the cost and connection overhead of prior single-port models. They report to a Windows-based console or a new Unix application that integrates with the three leading enterprise network management platforms—IBM's NetView for AIX, Sunsoft, Inc.'s SunNet Manager for SunOS or Solaris and Hewlett-Packard's Co's OpenView for HPUX.

"Now I can reduce to four the probes needed to monitor the traffic on the 16-segment network in our New York head-

quarters, saving ports on my Ethernet hubs and trimming costs," said beta tester Marc Snyder, network manager of the polymers division at Ciba Geigy Corp.

A single four-port Foundation Probe costs \$4,995, compared with one-port Rmon probes that are priced from \$2,000 to \$5,000 each, according to Geoff Weaver, product manager at Network General in Menlo Park, Calif.

More important is Network General's Foundation Manager for Unix, which continuously gathers probe information for analysis and reporting. It runs on OpenView along with other network element managers.

"When you're running 24-7 collection and analysis, you don't want Windows PCs that crash," Snyder said. "Unix machines run months at a time without problems, and we can actively analyze all 16 segments without resource problems."

Probing for problems

Network General is giving network managers new hardware and software options for Remote Monitoring (Rmon) analysis of distributed LANs.

Product	Foundation Manager for Unix	Foundation Probe
Description	Management application for major Unix network management platforms that collects, graphs and analyzes data from Rmon probes	Rmon probe for gathering traffic statistics on remote LAN segments and reporting to management console. Includes PC, adapter cards and agent software.
Availability	SunOS and HP-UX (now); AIX and Solaris (next month)	Software (now); Probe systems (next month)
Price	\$7,995-\$6,995 without protocol interpreters	Ethernet: \$4,995 (four ports), \$2,995 (one port); Token Ring: \$5,495 (three ports), \$3,495 (one port); Foundation Agent: \$1,795 (multiple ports), \$495 (one port)

The biggest trouble spots apparently surfaced at highly popular Web sites built in Northern California, such as those run by Yahoo Corp. and Netscape, both in Mountain View, Calif.

"We heard from users about it, but no one blamed it on us," said Tim Brady, Yahoo's director of marketing. "You could easily see it was a larger problem."

What to do

The Internet backbones run by MCI, Sprint and others must be upgraded to support high-speed applications such as video? Are you considering conducting electronic commerce over the Internet? Sound off at talkback@cw.com. Please include your full name. We'll publish a sampling of reader opinions in an upcoming issue.

Especially worrisome is the number of paths leading to the Internet, said Tony Rukowski, director of The Internet Society, a nonprofit group in Reston, Va.

Owners of networks connected to the Internet must diligently cooperate to get their respective systems to communicate smoothly, Rukowski said. "That gets more difficult as more networks attack together (see chart, page 1).

If it's just the sheer number of Internet users, but what those people are transmitting that will cause problems down the road, Briere noted. "Users are running video and other multicast-based applications that chew down on capacity," Briere said.

Unidentified Web page blames Legos' lawyers. See the Internet Page, page 68.



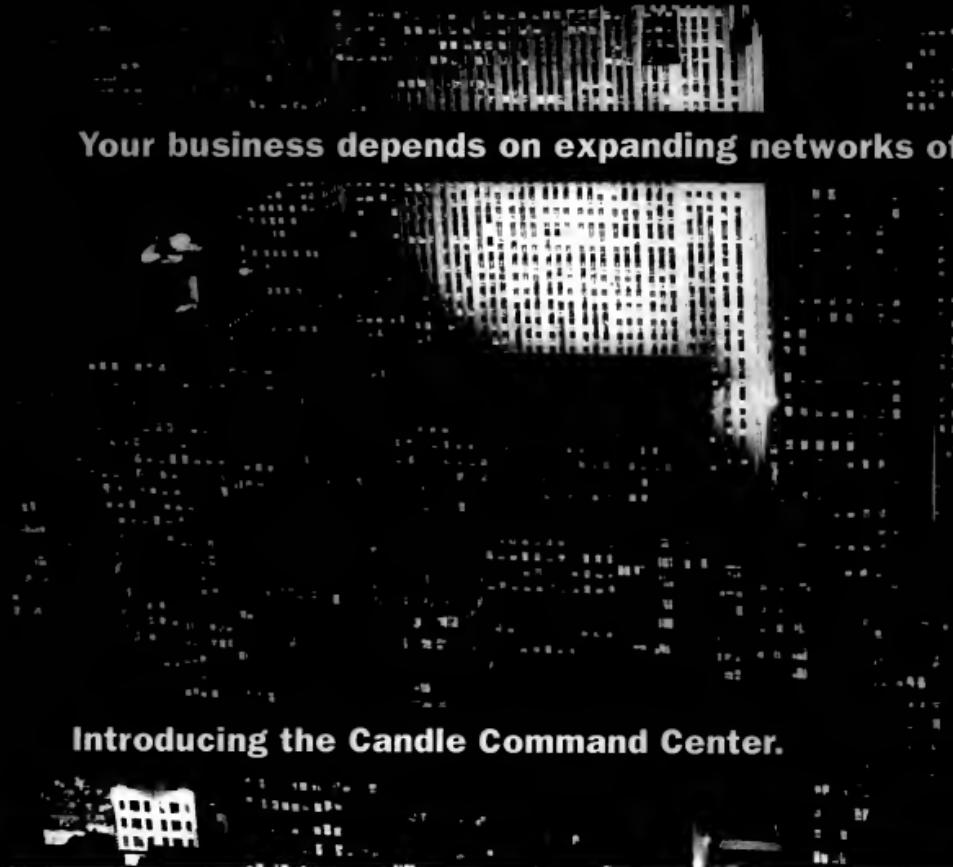
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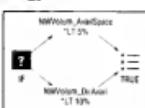
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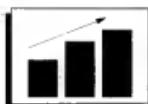
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Rock 'n' roll museum puts IS on stage

By Joseph Magluta

When Sherry Crosby steps out of her office, the hardware she sees isn't only cables, modems and PCs. It's John Lennon's guitar, Phil Spector's recording equipment and Eagle Don Henley's drum kit.

As head of systems at the recently opened Rock and Roll Hall of Fame and Museum in Cleveland, Crosby is part of the backstage crew that helped the glass pyramid shrine to rock legends become reality.

The \$92 million complex opened over Labor Day weekend, after 12 years of

planning, fund-raising and delays.

The seven-level facility on the shores of Lake Erie boasts 25 multimedia kiosks. They use a Sun Microsystems, Inc. SPARCserver 20 to store a 20G-byte video database and multimedia networking software from Starlight Networks, Inc. in Mountain View, Calif.

The kiosks offer an interactive exhibit called "The Beat Goes On." It demonstrates how different musical styles, such as soul and rhythm and blues, shaped one another.

Like hundreds of other employees and volunteers, Crosby spent the past several months scrambling to prepare for the long-awaited opening Sept. 1.

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Interactive exhibits play a big role at The Rock and Roll Hall of Fame and Museum

It is no wonder, since the entire information systems group comprises two people — systems administrator Crosby and technician Marcus Brown. "We're a nonprofit," she explained.

Needless to say, pulling off the IS end of the project required long hours and quick study of new technologies, including ticket printing, bar codes, Microsoft Corp.'s Visual FoxPro databases and Microsoft's Visual Basic.

To prepare for the kickoff, the pair worked day and night on several projects: upgrading a high-office LAN from Novell, Inc. NetWare 2.15 to 3.12, setting up computerized "donor kiosks" and training users on a ticketing application.

They also helped oversee Ameritech, Inc.'s installation of integrated services Digital Network for the 162-foot museum tower and wired a nearby satellite office in the LAN with a 64K-byte data line. Crosby and Brown also spent hours troubleshooting a finicky commercial PC-based system that tracks the \$10.90 admission fees. Then there were the 60 administrative Compaq Computer Corp. and other IBM-compatible PCs that had to be installed and checked.

"It's overwhelming, but you can't help but get excited," said Crosby, who began work six years ago as a receptionist at the Hall's former temporary location and learned technology on the job. In 1990, she took over responsibility for all computer decisions from the original technology committee.

Rock hardware

Rock and Roll Hall of Fame visitors can choose among son and/or music videos on Apple Computer, Inc. Macintosh Quadra PCs. The machines connect to a 20G-byte database through Sun Ultra 3 server. The server uses multimedia software from Starlight Networks and a software-TAN.

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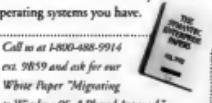
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New standard unites ATM, frame relay

Eliminates 'migration migraines' on networks

By Neal Weinberg

A standards agreement reached two weeks ago is expected to help pave the way for users to mix frame relay and Asynchronous Transfer Mode (ATM)

traffic on their high-speed networks.

If all goes as planned, frame-relay users will be able to move to the higher bandwidth of ATM without migration migraines or having to make an all-or-nothing choice.

Frame-relay-to-ATM service is expected to be offered by long-distance carriers early next year, using a standard developed by the Frame Relay Forum and the ATM Forum. The standard eliminates the need for protocol conversion software on the user end. Essentially, the network will translate ATM sites for frame-

What it is:
ATM is a high-speed packet switching technology.
Frame relay is a high-speed packet switching technology.

relay sites and vice versa.

The agreement that advances frame-relay-to-ATM interworking was approved by both forums. Rosemary Cochran, a principal at Vertical Systems Group, Inc. in Dedham, Mass., called the agreement "a significant milestone" in smoothing the migration path for frame-relay users looking to move to ATM.

She said users will be able to adopt a mixed model instead of having to swap their frame relay for ATM, using frame relay at smaller branch offices, for example, and ATM at the high-volume headquarters.

Phil Marzullo, vice president and chief information officer at Ren Corp. in Nashua, N.H., uses frame relay to send medical records to 70 kidney dialysis clinics across the country.

He is starting

to run into bandwidth constraints at some of his larger locations. Plus, Marzullo would like to add voice capabilities and send medical images across the network, which would mean switching to ATM.

Marzullo said he would have "the best of both worlds" if he could add ATM at his five or six largest locations and keep his frame-relay network intact.

Martin Dintizis, an analyst at Datapro Information Services Group, Inc. in Delran, N.J., said "this is a significant development, but it won't solve all the problems."

Cochran said the agreement represented a good handshake between the two technologies, but some interoperability issues still must be ironed out, especially among equipment vendors and service providers.

John Casadonte, chairman of the Frame Relay Forum's market development and education committee, said the agreement was intended to ease some of the technical pressures, so customers can focus more on business problems.

The goal of the new standard is to make communications between the frame-relay and ATM devices totally transparent to end users, he said.

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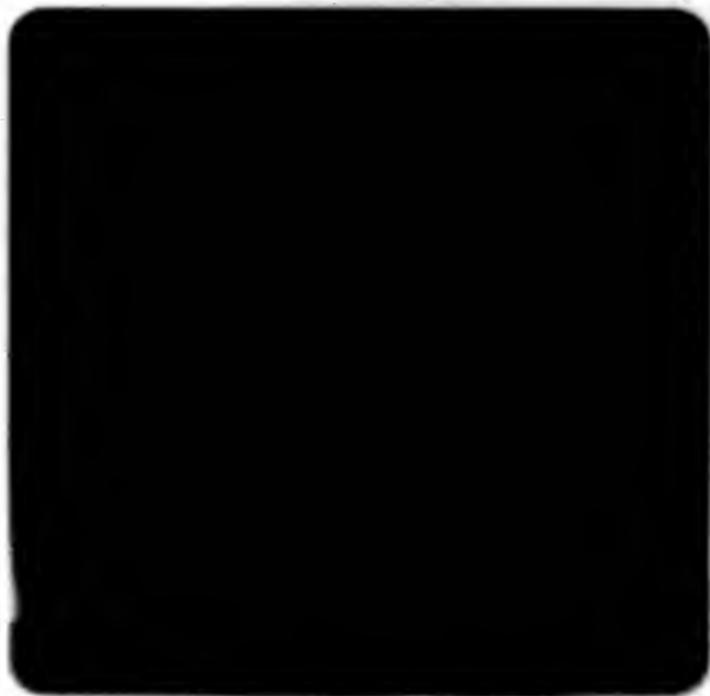


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Changing times?

Several vendors call plan to relax export of strong encryption products vague, seek stricter policy

By Gary H. Anthes
WASHINGTON

The Clinton administration's recent decision to relax restrictions on the export of strong encryption products is drawing mixed reactions — from relief to dismay.

Some vendors hailed the announcement, saying they will move forward with plans to develop such products, which are used to ensure the confidentiality of files and messages. Still, others said they will wait for details, complaining that the White House proposals were too vague and limited in scope.

"I think you'll see the industry waiting for a hard-and-fast policy to come out," said Dan Burton, vice president of government relations at Novell, Inc.

After months of silence, the government said it would work with the industry to develop policies and procedures for the export of 64-bit encryption products, which are approximately 16 million times stronger than the 40-bit products currently available for export [CW, Aug. 21].

However, those 64-bit products will have to include a key escrow feature that

allows law enforcers with a court order to obtain the encryption keys from an escrow agent. Left to be worked out are several thorny issues, such as who the escrow agents will be and what restrictions other countries may place on the import and use of these products.

"Success and growth of the U.S. software industry is directly threatened by the government's refusal to adopt realistic export control policies," said Robert Holleyman, president of the Business Software Alliance, last week. He complained that the government had done nothing to ease restrictions on non-key escrow encryption but has "focussed entirely on fulfilling its desire to be able to access encrypted information."

Critics contend that government controls on the export of encryption products are silly because similar products are already available from non-U.S. sources. There are more than 200 foreign encryption programs available from 21 countries, according to the software alliance.

It isn't clear how much market demand exists for key escrow products, irrespective of their strength and exportability. "I

can get 64-bit encryption products from Sweden off the Internet, and no one holds the keys, so why would I buy any of these products?" said William F. Dawson, vice president of information security at BDM Federal, Inc. in McLean, Va.

But others see a growing demand for encryption products that allow a company to unlock the data files of its employees. Trusted Information Systems, Inc. (TIS) in Glenwood, Md., just completed such a product, which it calls an "emergency data recovery" system for businesses.

TIS will license its key escrow software to vendors for inclusion in their applications, and it has teamed with National Semiconductor Corp. to develop a tamper-proof smart card offering strong encryption and key escrow.

Users decide

Meanwhile, Bankers Trust Co. in New York is developing an international key escrow service by which users can select their own key escrow agents. The bank declined to provide details except to say that the service will be geared toward protecting data storage and communications.

Stephen Walker, president of TIS, said the White House announcement is good news for users despite some opposition to the key escrow requirement. "The user gets emergency key recovery if he needs it. And he doesn't give up anything because he's subject to a search warrant to seize his encryption anyway," he said.

If commercial key escrow is viewed as the solution to the export impasse, there

will be a big market for it," said Lynn McNulty, president of McNulty Associates in McLean, Va. "If it is the way users can get strong encryption and yet they hold their own keys, then this will be viewed as an acceptable compromise."

In a recent survey of its members, the Computer Security Institute in San Fran-



cisco found that almost four out of five respondents would be willing to employ key escrow encryption if they could be their own escrow agents. Far fewer said they would be willing to trust the keys to a commercial third party or government agency (see chart).

Senior editor Kim S. Nash contributed to this story.

Insurance firms speed development with shared objects

By Elizabeth Heischler

Six of the country's largest insurance companies are counting on shared object-oriented technology to help them cut application development time and costs, according to IBM.

At the vendor's request, the insurers have agreed to back an IBM effort to develop a set of class libraries specific to the insurance industry.

Application development Based on the Common Object Request Broker

Architecture standard, the libraries will be comprised of reusable software components that provide basic building blocks of functionality for application development.

Sharing components for building common operational systems will enable the insurance companies to devote more information systems resources to developing strategic applications that offer a competitive edge, said Phil Proutfoot, director of advanced technology at Prudential Business

Systems in Roseland, N.J., which is participating in the project.

"Eighty percent of what we do is very similar — there are only so many ways to process loans or do billing," Proutfoot said. "The other 20% is where we differentiate ourselves in the way we service customers or the way our workflows wrap around administrative processes."

Proutfoot said the object-oriented applications framework may keep the industry from repeating the past. "When CICS came into being, all the major insurers each developed a CICS system for data inquiry and transaction processing, and each spent millions of dollars," he said. "But within three to five years, they were all on a par with each other and had all spent a ton of money. By partnering in things we have in common, we can all reduce our costs."

IBM has committed to investing \$70 million to the effort over four years and will market the resulting frameworks, said Mark Bigner, manager of insurance architectures at IBM. The frameworks will be available to participating companies, who will have early access to the technology, and all others in the industry.

The first framework — for building client management systems — will be available as a set of Smalltalk class libraries in the first half of 1996, with a C++ version following about six months later, Bigner said. Pricing information was unavailable.

Companies willing to confirm their participation in the effort included ITT Hartford Life and Accident Insurance Co., both in Hartford, Conn.; Country Life Insurance Co., Bloomington, Ill.; and Prudential, which supports the

shared systems needs of the individual insurance providers at The Prudential Insurance Co. of America.

Bigner said six companies in the U.S. have signed on as well as about six international firms.

General Accident Insurance Co. of America in Philadelphia is evaluating the framework, said Wayne Ratz, vice president of application development and planning. "It looks like a pretty good architecture. From a management perspective, it saves time and jumpstarts development," he said.

For IBM, the insurance effort represents only the first of several industry-specific, object-oriented application development frameworks, with the banking and health care industries likely to be targeted next, Bigner said.

Steve McClure, an analyst at International Data Corp., said he expects to see this model repeated in other industries. For example, Atelier Research Inc. in Westport, Conn., is organizing a group of its banking clients to try to develop a similar applications framework.



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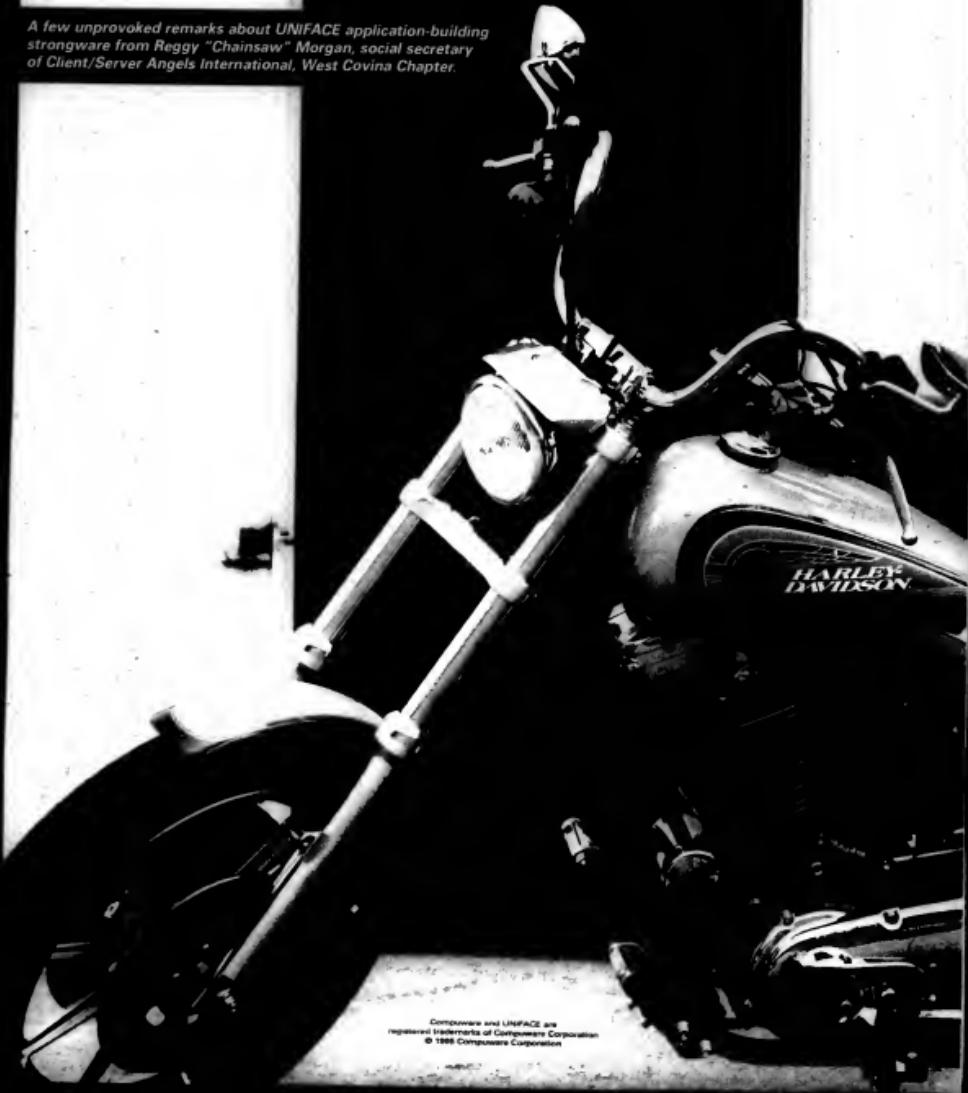


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*A few unprovoked remarks about UNIFACE application-building
strongware from Reggy "Chainsaw" Morgan, social secretary
of Client/Server Angels International, West Covina Chapter.*



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WHAT THE BIG GUYS USE

Computer Industry

Sun brews up Java plan

CONTINUED FROM PAGE T

freeware for client machines, Web server users must license Java from Sun.

Users and analysts last week said Sun is responding to the fact that Intel Corp. Pentium-based PCs running Windows are siphoning off the demand for Sun's Unix workstations in many large corporations (see story at right). "The desktop of the future is Windows, and Sun seems to have come to grips with it," said Scott Winkler, an analyst at Gartner Group, Inc. in Stamford, Conn.

Eric Schmidt, Sun's chief technical officer, said the company will develop Java services and applications and will charge for Java licenses sold to hardware firms, server companies and large corporations with Web servers. The Hot Java browser and Java client software are currently free.

"Everyone thinks of Java as an Internet play, but the real amount of money that will be made on Java technology will be made on networks within

corporations," Schmidt explained.

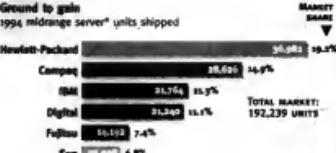
At least one large user — FedEx Corp. in Memphis — thinks it can make use of Java applications and middleware to tie together users' Windows desktops and Unix applications running on the firm's Sun servers.

"Java would allow us to be a lot more flexible about what is on the desktop," said Kevin Humphries, vice president of line-haul systems development at FedEx. "Our applications would deal with a Java-like interface, and the desktop would deal with Java middleware."

The Java squeeze play is an important part of Sun's plan to move briskly beyond its traditional role as a workstation provider. Profit margins for its Unix workstations, which account for 70% of Sun's revenue, are slipping, even though workstation sales are growing 20% a year.

Sun is banking on steep

Ground to gain 1994 midrange server* units shipped



Source: Datapoint, Inc., San Jose, Calif.

growth in high-profit Unix servers to fuel its future. Those servers can support hundreds of Windows PC clients using its SolarNet software.

Server surge

Sun's server business is growing more than 50% a year and accounts for roughly 80% of its revenue, including service and support. Overall, the Unix server market is growing more than 40% a year, as users re-engineer mainframe systems for client/server networks.

"I'm a lot less worried than I was a year ago because Sun has executed on their plan," Winkler said. "They've continued to grow and put distance between themselves and all the other Unix players, except IBM and HP."

But Sun is also feeling the heat as many other systems vendors line up behind Microsoft's Windows NT — at least for departmental servers. In July, Sun announced a marketing pact that couples Sun Unix

servers with pre-packaged client/server applications, relational databases and beefed-up support for all three types of products.

Since midsummer, the vendor has reorganized its hardware business along product lines so it can modify products more quickly based on commercial IS feedback, Sun executives said.

Company executives claim that Sun's strong financials and healthy cash position — with roughly \$1 billion on hand and 26% in revenue growth since last July — show that the vendor's plan is on the right track.

Waiting game

Yet industry analysts fault Sun for its slow response to technical users' complaints about lagging workstation performance and reliability. Sun plans to remedy that with new units based on the 64-bit UltraSPARC chip (see story below). The new chips will be at least 20% more powerful than the current crop of 32-bit chips, Sun said.

"Some of their technical customers are clearly aware that Sun is shortcomings there," said Tom Copeland, director of workstation research at International Data Corp. in Framingham, Mass. "Without UltraSPARC, people would definitely look elsewhere."

Many longtime users at large sites said they are waiting to see what Sun will serve up this year and next before they decide to migrate to other systems.

Pete Wagner, information systems director of HCIA, a \$60 million health care information provider in Ann Arbor, Mich., gives Sun credit for changing its mind-set from that of workstation supplier to a systems-and-service vendor in the past two years. "At this point," he said, "they're basically there."



Brewers' Paul Mallik is moving developers off Sun

PCs invade Sun's space

Some of Sun's best customers are using Windows-based PCs to lower the cost of desktop workstations or gain a unified Windows-based electronic mail system.

PC-based software tools for computer graphics and for software development are improving. Ansoff Petro-Canada Ltd., for example, combines Windows PC desktops with Sun servers. And Charles Schwab & Co. recently substituted Windows NT desktops for Sun workstations in a major re-engineering project.

It's no longer news that Sun or SunOS is for the development, said Paul Mallik, manager of IS at Brewers Retail, Inc., in Mississauga, Ontario. The same goes for Sunware Corp.'s Unixice tools to develop Unix applications on Sun workstations, but if Sun plans to move roughly 15 programmers to Windows-based PCs next year.

Gene Kotack, director of information systems at Brewers, said the firm will retain three large Sun multiprocessor servers, with 120 bytes of memory on each.

Brewers' information high-lights Sun's worst nightmare for the desktop — but also its hope for the future. Even as Windows NT becomes, Kotack said, "I'm not going to go to that platform for my corporate database server and I'm sure it's rock-solid."

—Joan E. Borreson

Challenge checklist

Sun is facing a number of major challenges in 1995, environmental analysts agree. Among other things, the company must do the following:

- Launch a new midrange server and server/monitor for its new UltraSPARC system with the older Ultra-32C operating system. This could be a mid-range server migration, but only half of its 1-million-plus installed machines currently use Ultra-32C.
- Keep up the competitive pressure against Hewlett-Packard Co.'s Unix workstations, conventional Unix servers and servers at the high end. On the low end, the battle is pitched against Windows desktops and Windows NT servers. Sun says it offers better price-performance than NT and that distributed computing and the Internet play to its previous strength more readily than to Microsoft's.

stations.

- Migrate the bulk of its big user sites on the Solaris 2.4 operating system. The new UltraSPARC systems won't run the older Ultra-32C operating system. This could be a mid-range server migration, but only half of its 1-million-plus installed machines currently use Ultra-32C.

- Keep up the competitive pressure against Hewlett-Packard Co.'s Unix workstations, conventional Unix servers and servers at the high end. On the low end, the battle is pitched against Windows desktops and Windows NT servers. Sun says it offers better price-performance than NT and that distributed computing and the Internet play to its previous strength more readily than to Microsoft's.

—Joan E. Borreson

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overcomes obstacles to installation, to system management, and to the desktop.

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Weird science

A few years ago, a computer publication came on the market with an appealing promise: It would break new ground by benchmarking complex data center products such as minicomputers and financial applications against each other in a million-dollar laboratory.

There was one small problem: The results were meaningless to the real world. Readers figured that out after the first few issues, and, for one reason or another, the publication didn't last long.

I thought about that last week when I read our story about SAP AG catching flak from a market researcher and several customers over apparently playing fast and loose with benchmark results. It seems SAP didn't disclose some key information about how its benchmarks were performed and didn't seek confirmation of its results by an independent auditor. A CIO who's a major SAP customer summed up nicely what I think you can say about all lab tests: "The problem is that the benchmarks don't really reflect reality."

Tests that measure raw performance on a standardized set of data in a lab will succeed in measuring, well, performance on a standardized set of data in a lab. There's nothing wrong with that, but let's keep benchmarks in perspective. Real-world conditions can never be measured in a lab. And if vendors can fool with the test conditions, watch out. Software engineers will tell you that if they have the chance to play with disk caching, processor prioritization, microcode and the like, they can make even an average product stand up and whistle "Dixie." But, as a colleague of mine used to say, if you blow it at hard enough, a brick will fly.

Vendors flaunt benchmark results because they appear to make the purchasing process simple. With so many lab tests to choose from, it's a fair bet that just about anyone can find a result that'll make his product look better than the rest.

The closest thing in a real measure of performance is the experience of users like you in real-life settings. The true test of performance is how open a vendor is with its customer reference list. Anything else is just numbers.


Paul Gillin, Editor
Internet: paul_gill@cw.com

Viewpoint

News item: Report questions SAP benchmark procedures.



Not over yet

Your July 31 News Shorts stated, "Last May, a New York judge ruled Prodigy was liable for defamatory statements made by a participant on the on-line service." This is incorrect.

Plaintiff Stratton Oakmont, Inc., had motioned for a ruling that Prodigy was a "publisher" as that term is used in libel law. Prodigy argued that it was a "distributor" — a conduit with no control over content. The judge found that Prodigy's promotions, guidelines and practices of reviewing content and deleting messages precluded its being declared a mere conduit.

The issue of liability has yet to be argued and determined. It's possible that the judge or a jury will decide in favor of Prodigy on the issue that you said has been decided.

James R. Coleman Jr.
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Wrong way

Object Cobol isn't the answer ["IBM spox spot for mainframes in client/server," CW, July 31]. It's nice to see IBM producing an object-based version of Cobol, but it isn't likely to help IBM guarantee a place for MVS in the client/server world. The problem has nothing to do with programming languages and everything to do with connectivity and infrastructure.

Most MVS applications are batch or 3270-based CICS or IMS transactions. If IBM wants to market MVS as the ultimate server platform, it must provide an infrastructure to connect to client/server

tools IBM's work with standards such as the Open Software Foundation's Distributed Computing Environment and its own Distributed System Object Model is more likely to ensure success than Object Cobol. DCE, on MVS provides direct access to CICS, IMS and batch applications from any client enterprise-wide. And it's fully integrated with MVS security.

Anne Thomas
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Hit and miss

In "Feds declare NT 'open system'; Unix takes a hit" [CW, July 31], you say, "Posix is a government standard for open systems." This is false. The U.S. government uses a superset of Posix standards to define what computer systems it will use, but Posix is an international standard. The Federal Information Processing Standard is published by the U.S. government and used to procure computer systems. Is this what you were thinking about?

James Lovell Mous
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Web sites need IS

The fact that IS personnel aren't active in their companies' Web sites ["Bypassed again? Is often left out of Web planning," CW, July 24] should sound multiple alarms for CIOs.

Getting on the Web with a home page is a no-brainer. Getting the

most from the Web's global reach and information delivery capabilities takes a lot of gray matter.

Web sites should be strategic and tactical tools for companies. They should require an organizational team that includes people from marketing, engineering, customer service and IS.

IS needs to be involved because it's ultimately responsible for protecting the organization's most critical resource: computerized data. IS needs to determine how much they want to risk potential security breaches for the trade-off of more customer access.

IS people also need to be involved because they have a better understanding of the technology. Graphic designers love to develop large and visually attractive home pages. IS people understand that downloading those pages can take so long that the visitor will give up.

IS people also understand how to make their Web site profitable by delivering customer service. For example, a help desk Web site that lists common problems and solutions can dramatically reduce customer support calls.

Web sites offer benefits and risks. The risks and the rewards are too high not to have IS people on the team.

Andy Markin
Santa Clara, Calif.
markin@erinet.com
More letters, page 40

Computerworld welcomes comments from its readers. Letters should not exceed 200 words and should be addressed to Bill Lohsen, Editor in Chief, Computerworld, P.O. Box 2929, 500 Old Connecticut Path, Framingham, Mass. 01702. Fax number: (508) 875-8931. Internet: letters@cw.com. Please include an address and phone number for verification.

FROM CONGRESSIONAL TESTIMONY BY BILL SAMPLER, FINANCE DIRECTOR AT LOTUS DEVELOPMENT CORP., AT A HEARING FOR A PERMANENT FEDERAL TAX CREDIT FOR RESEARCH AND DEVELOPMENT:

"At Lotus, we are constantly reminded of the benefits of investing in marginal R&D projects outside of our core competency. In 1984, a young Lotus software engineer had an idea for a new software product completely unrelated to Lotus' current business. Lotus (executives), satisfied with their spreadsheet success, were hesitant to fund a project outside of their area of expertise but eventually agreed to fund some development work...."

"In the late 80s, spreadsheet revenue growth slowed and cost pressures caused the company to back on some R&D projects. Lotus' vice president of finance, who believed in the young engineer's product vision, used the availability of the R&D credit to hand incremental R&D to help save this project. This research project culminated in the development of Lotus' Notes... the unquestioned key to Lotus' continued success and survival, supporting over 6,000 jobs."

FROM A SPEECH BY ROBSCOE B. STARKER III, A COMMISSIONER ON THE FEDERAL TRADE COMMISSION: "One difference between traditional advertising and advertising on the Internet is that the technology bringing the advertising to consumers may blur the lines between what is and is not an advertisement. For example, on-line entertainment may be fact be an advertisement or contain advertisements. This blurred line may be analogous to television commercials.... The FTC requires advertisers to disclose that they are paid advertisers. This raises the question of whether on-line entertainment that is also advertising might contain a similar disclosure."

Sex, suicide and virtual reality

Joseph Maglitta

I love my computer, but I don't want to have sex with it. Apparently, not everyone feels this way.

The other day I ran across a small software ad in the back of a popular PC magazine. The headline read: "Now you can have your own girlfriend... a sensuous woman living in your computer!" The copy went on to describe "the first virtual woman."

"You can watch her, talk to her, ask her questions and relate to her. Over 100 actual VGA photographs allow you to see your girlfriend as you ask her to wear different outfits and guide her into different sexual activities. An artificial intelligence program with a 3,000-word vocabulary that grows the more you use it! She will remember your name, your likes and dislikes. Requires 10M bytes of free space." All for only \$69. (An optional video kit costs \$29 extra.)

A few days later, in another computer magazine, I came across a lusty virtual reality package that offered an optional flesh-colored replaceable for use with the user's own, um, peripherals.

These products ("grupeware") embody a powerful reminder for IS professionals and anybody else who conceives, creates or purchases software applications.

No, the lesson is not "If you build it, they will come." Rather, it is this: "Just because you



"Gropeware" is a reminder that some things are best done in person, and some systems are better left unbuilt.

could, doesn't mean you should." Just because you can build a system doesn't necessarily mean it's a good idea to do so.

You may ask, "What does this have to do with you?" Yet you'd marvel at how often this simple truism is ignored or forgotten. Oddly, the Japanese — whose products virtually define practical technology — seem particularly vulnerable.

Some of the products include the following:

• A powerful Ministry of International Trade and Industry has introduced a prototype "electronic secretary" for office use. A woman's face on the screen can display six expressions, including a smile, moodiness or anger.

• A computer-aided fishing simulator was developed by The Kochi Prefectural Industrial Technology Center. An attached rod tags and twists according to the movements of an on-screen fish.

• A software program that predicts when a ter-

minal ill person will die has been created by researchers at George Washington University. Similarly, cyberdelic icon Timothy Leary is working on software that helps users decide when to commit suicide.

These efforts make a crucial point: Many tasks are better handled off-line, with little or no computerization. They include persuading, relating, buying, selling, yelling, greeting, meeting, building and patching relationships, brainstorming, troubleshooting, admiring, scolding. And some things are better left undone, period.

Remembering these realities is especially important at a time when IS resources are stretched thin and more development is being handled by neophytes and inexperienced end users. It's crucial at a time when business units and executives are gaga for groupware, multimedia, distributed data, the Internet and re-engineering.

Need more proof? A new survey of 1,000 people found that 40% prefer human interactors to ATMs.

Do your users and staff a favor. Remind them that for some things, old-fashioned flesh and blood is the way to go.

Maglitta is Computerworld's senior editor, corporate strategies. His Internet address is joe_maglitta@cw.com.

Beware the warehouse hype

Patricia B. Seybold

Data warehousing has become a marketing monster.

Practically every hardware and software vendor has a "data warehousing solution." Every corporate IS organization I talk with has a "data warehousing strategy," with projects under way to build one or more warehouses.

But I have two concerns. First, I fear that many people are throwing a lot of money at a so-called "solution" that may not address the real underlying problem. My second worry is that their technology approach will turn out to be another legacy legacy anchor.

So, why exactly do you think you need a data warehouse? Because you want to have all the important information about your business available for decision-makers. Today, that information is buried in a set of disparate applications that run different parts of your business. If you were to let users constantly interrupt those applications to ask for a bit of needed information, you'd bring your transaction processing systems to their knees.

So it's not surprising that, during the past 10 years, information technologies and database designers have created the data warehouse. Yet, the reasons IS organizations give for building data warehouses vary greatly. Customers

I've talked with cite the following rationales for their data warehousing initiatives:

1. Get our data out of jail.
2. Get answers to business questions that we can't answer now.
3. Empower employees to make decentralized decisions.
4. Integrate systems and applications.
5. Create and deploy a global data model.
6. Improve the quality of operational data without rebuilding outmoded databases.
7. Create a consistent view of data across the enterprise.
8. Get answers to business questions faster.
9. Off-load reporting duties from corporate IS.
10. Provide good performance to users of both decision-support and transaction processing applications.

Which of these goals are good reasons to build a data warehouse? Only the last four.



Without realistic plans, data warehousing can turn into a money sinkhole and a legacy bad anchor.

The others are organizational problems masquerading in data warehousing clothing. Remember, data warehousing was designed to give end users faster access to the information you already have, without impacting your IS systems or resources.

Even if you are implementing a data warehouse for the right reasons, how do you keep it from becoming obsolete?

Frankly, there's no hope of creating a global meta-data dictionary for your organization, populating a data warehouse and keeping it current. Nor do I think it's a good idea to create departmental or functional data warehouses and then try to tie them together.

Instead, start with a single business process, such as procurement, that cuts across functions and departments. Use middleware to pass the important business events that make up the business process from one application to another. Let your data warehouse be a dynamic application that "subscribes" to these business events as they are "published" by the applications. Then repeat the process for the next core business process, refining and updating the business events you've already defined.

Seybold is president of Patricia Seybold Group in Boston. Her Internet address is psg@psebold.com.

Viewpoint

Try site licensing to stop foreign pirates

The black-flag editorial [CW, July 24] on rampant software piracy in flea markets and bazaars in the poorer parts of the world called it "incredible." But given the

ease of copying and the poverty of the citizens, it is all too credible.

It seems unlikely that widespread low-level piracy can be effectively inhibited. Even an attempt to do so would make foreign governments unpopular for selling out in already rich and powerful Americans.

But there is still one thing our government can do: insist that our trading partners "site-license" American software countrywide. Third World governments

are already comfortable with the concept of collective purchasing and distribution, and our vendors are at home with site licensing. Everyone would win.

• **Foreign traders** would look like the good guys for selling their software for mere pennies on the dollar. And they'd do well by doing good. They'd receive tens of millions of dollars for a single low-overhead sale instead of pennies from attempting a million high-margin sales.

• **Foreign governments** would also be

come good guys to their people, providing low-cost or no-cost software with documentation and a support number.

• **Foreign consumers** would receive a package of tools they could use to lift themselves out of poverty.

• The U.S. would benefit in the long run from those ties in future commercial dealings. Short term, we'd cease looking greedy and unreasonable.

Such a site license could be arranged several ways. The simplest for governments in cope with would be an overarching agreement with a vendor consortium to arrange all subsidiary details on the fly with an appropriate official agency. It would set up a foreign office abroad and interface between vendors and government, sign deals on their behalf, track distribution and usage, supervise support lines, distribute updates, publish a newsletter and so on.

The other extreme would be an arrangement for the consortium to merely monitor a sample of free-market sales, extrapolate, charge the foreign government a royalty based on the estimate and distribute it proportionately to vendors.

In between those extremes is the traditional business model whereby each vendor negotiates separately with each foreign country. But it would be unjust to small companies with hot products, who would be unable to gear up in time to distribute and protect themselves successfully worldwide.

Roger Knights
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Diversity wasn't the point

Penelope Roberts' letter [Letters to the Editor, July 31] missed a key point of my article "Over 40, and You're Out" [CW, June 26] when she focused on male dominance instead of age discrimination. A company can have an excellent record with the Equal Employment Opportunity Commission, but that doesn't justify discrimination in its parts.

One could argue that one instance of discrimination can have the offsetting effect of leading to greater diversity; it didn't in my case. The same mix continued, but those promoted were younger. But one can't say all dragons in two pages—my focus was on age discrimination.

Age discrimination policies should be followed. Safeguards must not be bypassed because some attractive new leader promises, "If you install my people and do my thing, we'll conquer all." Let's work within the rules and avoid all discrimination in the process.

Larry Cooke
New Rochelle, N.Y.
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Introduction



The Next Plateau

We've all heard that in this life, there are only two certainties: death and taxes. These certainties are the inevitable consequence of people and money — two things business is often focused on managing.

Financial systems have often been the first business applications installed by a corporation. In fact, companies such as Andersen Consulting began as audit firms that automated accounting in order to reduce staff and thereby conserve capital. This capital could be more efficiently counted by automated systems, which could further reduce staff, which would further conserve capital... And so it went, from the late 1950s through today, when some firms are on their fifth generation of financial systems.

Human resource management systems (HRMS) have a similar history. Revenue per employee is a basic metric of our business culture. Applications that managed the life cycle of the human assets employed, rather than just payroll, did not make it big until the 1970s, but today are considered fundamental to the management of any business endeavor.

The pace of innovation in financial and HRMS applications is unrelenting. What is causing today's managers to again turn their at-

tention to the fundamental applications that run their business? What is motivating them to bring these applications to the next plateau?

A combination of business, market and technical factors is behind this change. The confluence of client/server technology and business process re-engineering now affords business the opportunity to reconstitute processes and practice while providing a new perspective on the reengineered organization.

Several application vendors initially failed to see sufficient value in the client/server model for themselves or their customers. But SAP's success proved them wrong, and the latecomers have had to build more sophisticated technology into their products. The Yankee Group expects this leapfrogging process to continue, until all these companies have implemented not just client/server, but also workflow, and have learned how to support their customers' increasing need to accommodate change.

Users will continue to decide when they need to upgrade their financial and HRMS applications. But the rapid evolution of the technology is allowing these applications to provide more information to more people over more geography, which will quicken the acceptance.

The Yankee Group is an independent information technology market research consultancy. Based in Boston, the company specializes in helping users and vendors develop technology strategies that meet their business needs. John Manu is research director of the Yankee Group's Client/Server Computing Service, which focuses on distributed computing architectures, implementation tools and infrastructure, including distributed systems management.

Back Office Apps Now at The Fore

HR and financial applications are in a period of rapid evolution. Because they are cross-industry applications — i.e., they are used by businesses in every industry — the potential market is large enough to attract many vendors. Every time that important technological changes occur, a new opportunity arises for these application vendors in advance by developing versions of their software that exploit the new technology. Innovation spurs competition which spurs more innovation . . . and the ultimate benefactor of this unending cycle is the user.

In the past, HR and financial applications were considered gray old "back-office" applications. In other words, they supported but did not run business operations. Historically, financial applications were primarily limited to departmental users. However, new technology is enabling these applications to take on operational roles by allowing them to provide more current information and to distribute it more widely, as well as by allowing users to apply more flexible and user-friendly tools to that information. This new technology starts with but does not end with client/server.

The market did not simply jump to client/server. For users at many companies, the functions of financial reporting and HR were working well enough, and for these users, more strategic applications took priority. In many cases, they integrated their financial applications with other applications, even thousands of them.

To get these users to move their financial applications off the mainframe, there would have to be compelling reasons. But there came along a series of technological advances, spaced over a ten-year period, that provided many of these users with the compelling reasons they needed.

Compelling reason #1: The arrival of the minicomputer.

The minicomputer could run a variety of interactive financial planning tools (including spreadsheets) relatively inexpensively and in a user-friendly manner. This in turn created demand for interactive, end-user-oriented functionality.



ew technology is enabling these applications to take on operational roles by allowing them to provide more current information and to distribute it more widely.

Compelling reason #2: The arrival of the relational database. RDBMSs provided the log-based transaction demarcation, rollback and recovery capabilities that previously required a transaction processing monitor. This set of capabilities, sometimes referred to as "TP Lite," allowed users to inexpensively move financial applications to minicomputers and open systems. Like file sharing earlier, RDBMS technology on minicomputers enhanced the "shareability" of data, another important factor in the process of taking applications off the mainframe.

At the same time, the use of a relational database allowed wider sharing of the data and created new opportunities for vendors of end-user tools. The accompanying cost reductions, coupled with the improved functionality, then allowed some HR and financial departments to bypass the MIS application backlog altogether and buy their own solutions.

Compelling reason #3: The arrival of the per-

sonal computer. The personal computer offered high-speed graphics capability far superior to that which had been available on dumb terminals. In essence, the PC's superior graphics capability was what permitted the development of spreadsheets and other analysis tools.

Compelling reason #4: The subsequent spread of PCs across all desktops, and the networking of those PCs. These related events will turn out to be the most important step of all. It is the ubiquity of networked PCs, and not just their raw capabilities, that counts. Now that application developers and software vendors can depend on PCs being everywhere, they can provide functionality across a wide range of users and roles.

Theoretically, the fifth compelling reason is client/server technology, which takes all four of the above reasons a bit further. But let's take a minute to look back.

In the mainframe era, there were two distinct types of computer users: clerical workers, who performed on-line transactions all day in a production or customer service environment, and technical or business professional workers, who enhanced their own intellectual abilities through interactive facilities such as editors, CAD tools and business data analysis tools.

To support these two different types of users, or roles, required different operating systems, or at least different modes of operation. Typically, it was inconvenient or impossible for most professional or "knowledge" workers to participate in transaction-oriented applications such as financials or HR.

Client/server changed all that. By combining end-user-oriented, interactive facilities on a client with the secure, transaction-oriented facilities and application services on a server, client/server allowed all users to perform any kind of business function.

Because of client/server, it is now finally feasible to build and deploy applications that can be spread widely across the entire geography of a company. Therefore, client/server technology has played a significant role in the many ways in which applications have improved:

- The application can offer much more data sharing. By moving to open systems with relational data-

bases, users can share data without enduring the requirement for a lot of special programming. (One user moved to a client/server version of financials not because of client/server per se, but simply to allow other applications to access that data without involving either the MIS department or the process of programming in a 3GL language.) By combining the shared data with interactive, graphical client tools, financial data can be used more readily and effectively.

As might be expected, an enhanced ability to share data has led to a cycle of improvements and rising expectations. When end users discovered data, they wanted it to be more accurate; as it became available, they wanted to apply it to operations and thus wanted it more current. Now vendors are beginning to talk about providing financial information in relative real-time to users across multiple departments.

• Although "empowering individual employees" is not as important a goal as it once seemed, businesses obviously gain benefits from supporting employees with necessary data and applications, and allowing those employees to use productivity tools in concert with any other applications they use in their jobs. In the long run, client/server will allow users to combine the forces of many applications — legacy

Six Advances That Led to Moving Financial & HR Applications Off The Mainframe

- 1 The arrival of the microcomputer
- 2 The arrival of relational databases
- 3 The arrival of the personal computer
- 4 The subsequent spread of PCs across all desktops
- 5 The networking of those PCs
- 6 Client/server

applications, client/server applications, desktop applications, workflow and others — to accomplish a business task.

• Current vendors are, as a group, moving into areas such as broad application-to-application integration, workflow and object orientation, according to their respective visions. The Yankee Group expects that to gain a competitive advantage, applications vendors will employ a strategy that focuses on technology.

For the most part, vendors will either offer benefits such as easier modification through object-oriented design or easier integration with other applications, or they will offer functionality such as event-driven processing and perhaps sophisticated distribution of event information to organizations across the enterprise. Of course, some will do both.

Ultimately, the industry will be fitting applications to the whole flow of users: business processes, data and events. Once users have been supplied with client systems, and once those systems have been connected to the enterprise network, it will be possible to design an application (and its integration with other applications) to fit both the structure and business process of an organization. This is the direction the industry is moving in.

Reevaluating the roles of HR and financial

Concurrently with the occurrence of these technological advances, users have been reevaluating the role that HR and financial systems play within their corporations. A fundamental shift in the use of HR systems has come with the realization by users that these systems can in and of themselves communicate, inform and influence one of the primary constituencies of the business: its employees.

After stockholders and customers, employees are the ones who determine the ultimate success of a business endeavor. More than availability of capital or access to markets, employees who are properly informed, motivated and remunerated will determine the amount of success an organization enjoys.

Consequently, HR applications have expanded in scope to become the weave within the fabric of the organization. They communicate mission, convey benefits and reinforce values and furnish to the practiced manager an unblemished image of the be-

havior of a vital corporate asset: its people.

Financial systems have undergone a similar transformation. These systems are no longer considered the exclusive province of professional accountants. Developers of first-generation financial applications wrestled with providing an auditable representation

Requirements for HR and Financials Applications

- Access to data from a broad spectrum of users and applications
- Applications integration, communication of events (e.g., orders, payments, receipts, etc.)
- Business event processing
- Workflow, in its many forms
- Accommodating change (flexibility)
- Distribution of information

of transactions which rendered the business in statutory terms to managers and shareholders. But today's systems are dedicated to simultaneously serving numerous clients with accurate and actionable information.

Knowledge is power

The "empowered" organization is also the informed organization. With the proper financial information, decision-making can occur at the appropriate level within the organization and within the necessary time frame.

To satisfy the requirements of corporate accounting, previous generations of financial applications focused on transaction consolidations. The financial system was also the principal decision support mechanism for the command and control organizational structure.

Today's information-based organizations are unencumbered by command and control hierarchies, which slow up the decision-making process, reducing the organization's effectiveness. These leading-



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Transformation in HR

HR departments were once corporate "hand-me-downs," processors of paper that often got stuck with outdated hardware and software. They were totally dependent upon IS for their systems needs and were usually given leftover systems or one stuck on the back end of a financial application.

But all that is changing. HR has finally been accepted as a key member of the corporate family.

The predominant reason for this new attitude towards HR is necessity. Firms that downsize and get leaner realize that they need to find ways to fully exploit their employees' capabilities. Also, the changing dynamic of the workforce, and its increased globalizatior, demand from companies flexibility and the ability to deploy resources quickly.

Today, management tools to HR to track applications: provide records on education and training; benefit, 401K and Cobra functions; ensure compliance with affirmative action and EEO requirements; keep up with the non-stop onslaught of new legislation; and be involved in acquisitions and mergers.

For many HR organizations, the vehicle that is facilitating their increased role is client/server computing. In fact, HR is often the first application that companies migrate to client/server, partly because any glitches that occur will not cripple the organization, and partly because HR is a very interactive application, with many what-if scenarios.

The journey from the security of a mainframe-based environment to the rough waters of client/server is by no means a smooth journey. Companies move to client/server if an HR department wants more timely information and wants it to be easier to get to. But that can be a tall order.

Often the primary obstacle is making a change in platforms in midstream. Companies moving to client/server should first get their technical infrastructure in place: the connectivity of the WANs, LANs, servers and workstations. Also, users coming from a mainframe environment may have to lower their expectations for online performance. One user saving a change at a remote site has reported a log up to 30 seconds.

Also, while client/server promises to put everything in the hands of the user, that is not always realistic. Access may be less widespread than originally hoped, especially when it comes to putting information in the hands of upper management.

But most HR departments implementing client/server applications have been pleasantly surprised. If there's an HR type that wants their ASCII terminals back, no one has met them yet.

edge organizations are able to institute continuous process improvement and outmaneuver their competition. They rely on the latest generation of financial applications to facilitate process improvement by providing accurate, secured information when it is needed as well as where it is needed.



financial application may provide sharing not always in the passive sense of "data access" but in the active sense of "notification."

Today's financial applications more closely reflect the behavior of the enterprise, with greater proximity to processes and events informing all of its stakeholders and not just those who face Wall Street at the end of a fiscal period.

To be effective, these applications must perform six functions:

1) Access to data from a broad spectrum of users and applications.

Financial information is needed throughout the enterprise. However, the same stream of external events (i.e., orders or payments) can have different meanings for different organizations. For instance, the arrival of an order might be unimportant for quarterly reporting purposes but might be very important for manufacturing operations (or vice versa). In addition, different details about the order might be important in each place. Security requires that information access be restricted according to policy. Therefore, "access" might in some areas consist of simple database sharing, but in others might involve executing transactions.

In addition, financial information may be required "when it happens", in the form of event notification. The arrival of an order exceeding \$1 million in value may be immediately important to a cash management application. Therefore, a financial application may provide sharing not always in the passive sense of "data access" but in the active sense of "notification."



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As with financial applications, for security reasons HR information is typically accessed not via database sharing but through inquiry transaction programs (which may be generic).

2) Applications integration: the communication of events (e.g., orders, payments, receipts, etc.) from application to application both within and across enterprise boundaries

Virtually any application produces financial transactions that have to be posted to the general ledger. Therefore, financial applications are integrated with incoming transaction streams from virtually all other applications. This is not new.

In the days of batch processing and week-long closing cycles, the movement of transaction information from the various applications could be accomplished by "sneakernet," i.e. by tapes, disks or messages. Today, up-to-date financial information means update of the ledger from any other application in as near real-time as the business requires. This requires substantially more than sneakernet. As a general practice, applications today send financial data to the general ledger in the format of transactions — singly, in small groups or in batches.

Some integration involves not only the front end but integrating on the "back end" as well, in order to utilize existing legacy applications. For example, a particular vendor's HR application package allows a user to move HR information to the mainframe every pay period. This enables a user to run payroll in the secure environment of the data center.

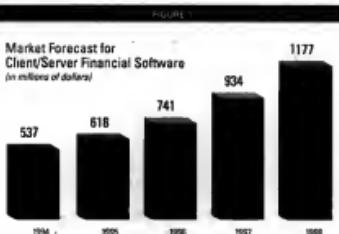
3) Business event processing

Fully distributed and integrated HR and financial applications, running on a real-time basis, essentially handle multiple streams of business events — most of them transactions — from the enterprise and beyond. (An example of an event is a payment, or an incoming order, or a shipment to a customer).

A traditional way to handle business events is simply to put together batches of event records, and run them through any and all applications that may need to know. Another way is to represent them in a

database. In an object-oriented environment, one might build a message describing each event (which could be just the original or an exact copy), and send it to all interested "objects" or applications, which then treat the incoming message as an "event" of interest.

In a relational database environment, the corresponding technique would involve triggers and



stored procedures. The vendors are all handling business events, each in their own way.

Whether events are processed as they arrive, in sequenced batches, or in some other order depends on the needs of the business. For maximum flexibility, an application must be capable of all of these.

4) Workflow, in its many forms

Financial and HR applications have long included support for approval cycles, where an action by one worker moves to a superior's in-basket for review and action. This is a form of workflow. If generalized, this can support almost any business process flow in the finance or HR department. (For instance, a capital requisition or an employee action typically originates in an operating department before making its way to either finance or HR.)

Most vendors are discussing workflow. Where they differ is in the scope and flexibility offered.

5) Accommodating change (tailorability)

As workflow becomes integrated with applications, someone in a corporation will become inter-

ested in being able to alter the internal flow of an HR or financials application just as it's possible to alter workflow involving people. Tailorability has long been a key attribute of HR and finance applications. Some vendors point at their product's tailorability and call it "workflow." Other vendors have gone so far as to develop their applications using object-oriented technology, which allows users to make changes anywhere.

6) Distribution of information

The information flowing into financial and HR applications is not there for archiving — it's for use. The final step is to distribute the information wherever it is needed.

Some distribution is dynamic; information flowing in is flowed out again, perhaps by message or triggered data replication. To the approach of one application vendor, the business event messages are moved essentially in their original form to multiple application systems, where they can be stored and viewed as the applications require.

Some distribution of information, particularly for historical and/or aggregated data, can be performed through a data warehouse, a database of information stored for easy understanding and retrieval by end users. If good information is available in a data warehouse, user departments can offload one burden from IS: the burden of constantly modifying reports as users' needs change.

Shield no tiers

Today's HR and financial applications are more sophisticated than previous generations, and competition is driving the vendors of these applications to compete in their use of client/server, workflow, distributed computing, event processing and object-oriented technology.

Since these applications use the terms client/server and workflow and others in unique ways, they will need to be defined here as the applications use them.

Client/server is everywhere undergoing a radical change in definition, with the term "two-tier" applied to earlier implementations, "three-tier" claimed as a new

and better model, and "multi-tier" reportedly the new, ah, frontier.

The original two-tier client/server has a user interface and application on a desktop, networked to a

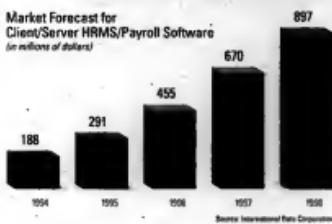


The three-tier model is promoted for its database independence. But a more important benefit is that it gets the application code off the unmanageable and unsecure client.

relational database server. This model is increasingly (and correctly) seen as a throwback to mainframe or minicomputer architectures, where the user interface and application were one process, and the database (whether IMS on the mainframe or a relational database anywhere) in another.

Porting this architecture to PCs connected to relational database servers was quite straightforward from a software design point of view, and represents some 80% of client/server implementations because it is sufficient for simple tasks. However, it represented an immediate step backward in manageability and security (because the client side, which used to run in a single, manageable, secure process in a minicomputer was now dispersed to unprotected desktops). Also, the two-tier client/server architec-

FIGURE 2



HRMS/FINANCIALS

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ture does not scale well, is difficult to manage, and to think of client/server in such a restrictive manner is somewhat of an intellectual hindrance.

The three-tier model is promoted by vendors for its database independence. However, an even more important benefit is that it gets the application code off the unmanageable and unsecureable client. As a rule, the HR and financials vendors, who are knowledgeable about the needs of commercial systems, have shied away from the two-tier model. There are some exceptions: One vendor allows the user to choose, and, in general, the two-tier model handles small-scale personnel applications well.

The step beyond three-tier is viewing the combination of application logic and the data it uses as an "application service." The server performs a known, fixed, predetermined business function, if and when it receives a properly formatted request from a client. Unlike the two-tier model and many three-tier models in which the client and server applications are designed to work only with each other, an application service function can be invoked by any authorized requestor (typically another application).

This brings up the most general and most useful

definition of client/server: *Client/server is any situation in which two independent processes work together.* The client/server relationship can be transitory ("Sweetie, please pass the salt") or more permanent ("Walter, get me a glass of water"). In the more general definition, a requestor invokes a service by sending it an appropriately formatted piece of data, called a message. In the two-tier model, the relationship is permanent, the service is only a set of relational database functions, and the messages contain only SQL.

The application services model will replace (and incorporate as special cases) the N-tier models. It is the model adopted by the most advanced vendors of distributed application development tools and, interestingly, by most vendors of HR and financials applications, who understand the needs of commercial applications. It is the model that supports integration of multiple applications, the fusing of what were once islands of application function into broad-scaled business process automation.

Workflow

Workflow is a global term to suggest multiple different ideas, but there is a

Options Are Open

Three years ago, if a CFO was in the market for a client/server financial application, the choices were so limited that many of them decided to become alpha or beta users for untested products.

But as the number of companies wanting to replace mainframe applications grew, vendors from all segments of the industry came charging into the market. Some were established providers of host-based applications that were beginning to offer client/server solutions; some were vendors moving up from the PC LAN arena; and some were newcomers whose first-ever financial applica-

tion offerings were for the client/server arena.

Companies from each of these categories have advantages and disadvantages. Vendors of mainframe-based financial software face the obstacle of dividing their resources between attracting new customers and keeping their installed base happy. For some of these vendors, the solution is to offer GUI front ends on existing host-based applications while simultaneously developing client/server versions.

Companies coming from the PC LAN arena must prove to the customer that they can make their prod-



uct scalable to an enterprise-wide implementation

that is perhaps globally distributed. The systems may also need additional functionality, such as multicurrency support, workflow functionality, integrated reporting with HR and manufacturing modules and E-mail integration.

The third group, consisting of start-up companies, has one advantage: They have no baggage in terms of their installed base. Although this makes them nimble in the marketplace, they may lack the marketing muscle and distribution channels to handle sales and support.

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common thread: the flow of business work items (or data). A work item must go through one or more steps, some of which are automatic; for instance, an order entry system might transmit copies of any incoming order of over \$1 million to four other application systems.



Workflow is important to users of HRMS and financial applications, who need to be able to design the flow of work items and data when they install the application

Other steps may involve people; for instance, a procurement request may have to go through an approval step involving a supervisory person. In some cases the flow is mandatory (e.g., the procurement request passing through the approval step), and in such cases the flow is controlled from "above," that is, some supervisory computer process.

In other cases, the flow is more optional, determined or decided by a participating application, or perhaps even decided by a human user on the spur of the moment (for example, in delegating or escalating a work item).

While existing products with workflow functionality offer a high level of sophistication, workflow in principle is fundamental to financial and HRMS applications. A work item can be as simple as a piece of data; in cases such as these, workflow is simply the flow of information. Alternatively, a work item could be very complex, such as an industrial accident insurance claim, involving huge amounts of data in multiple forms: voice, image, text, structured data.

Workflow is important to users of HRMS and financial applications, who need to be able to design the flow of work items and data when they install the application. It also remains important afterwards, when they need to fine-tune business processes. Users also commonly need to be able to modify the flow of the application itself without disrupting the application; vendors have long tried to provide support for this and sometimes refer to this capability

as "workflow." HR departments obviously can use image support within workflow — just consider items such as resumes, beneficiaries, claims, and performance reviews.

As the scope of HR and financials applications spreads across the enterprise, the scope of workflow will similarly grow. To support expanding functionality, users will require a full function workflow that spans multiple applications; includes in-basket queues for workers, work item tracking and status, and other tools; and interoperates across boundaries with other workflow products. Through this, users will be able to improve whole business processes.

Messaging, data flow and event flow

Messaging often refers to E-mail or the transport portion of an E-mail system. But messaging also means the direct transmission of formatted requests between applications: from clients to servers, or from servers to servers, or from a client to another client. This is sometimes called "process-to-process messaging," to distinguish it from "person-to-person messaging," or E-mail.

A message can carry a request or reply, but it can also simply convey information, in one direction. An important type of information carried in a message is an event notification, or simply an event. In such a scheme, messaging "pushes" events, asynchronously, without being asked. This means an interested application interested in a type of event (such as "large-incoming order") does not have to poll another application, or periodically look at a database, to see if something of interest has happened.

In several newly architected financial applications, there is a notion of a flow of business events (orders, payments, shipments) originating from many sources and being distributed to many destinations. In Figure 4 on p. 22, event data is flowing to the general ledger application for consolidation and reporting, to a data warehouse for later analysis, and to other databases and operational applications for use in day-to-day management.

Putting client/server and workflow together

Let's put our concepts of client/server and workflow together, and see where we are headed. Vendors are building applications on the application



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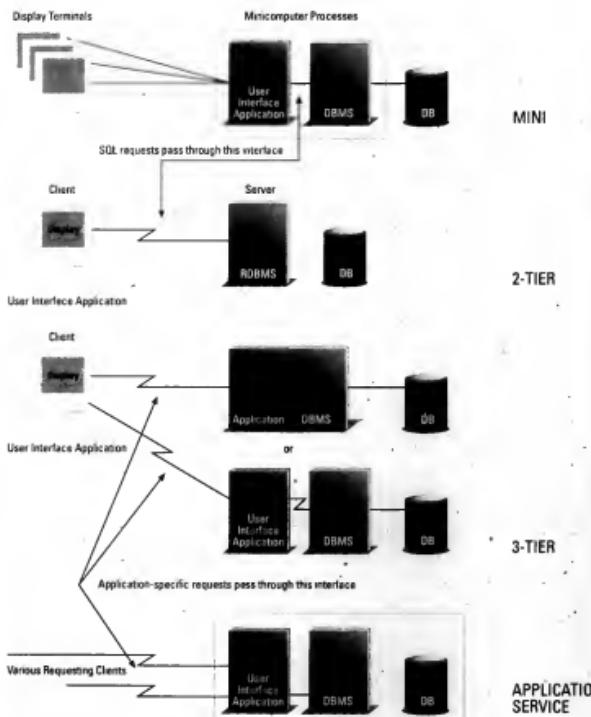
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Evolution of Client/Server HR/Financials



Source: The Varian Group

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White
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In a Distributed Computing Climate, HR's Role is Changing

The trend toward downsizing from centralized host computers to distributed client/server systems is causing a basic shift in how core corporate functions such as HR management and accounting are automated.

Driving this shift are changes in employment and economic conditions. HR functions such as hiring are often done now in branch offices in addition to headquarters. And payments to the growing ranks of part-time employees and outside contractors may be made by the accounting department, not payroll. Nonetheless, these payments are debited from HR's budget and must be tracked.

Because business functions are crossing over traditional lines, many corporations are finding that they must integrate the HR, accounting and financial functions. In a sense, they are recentralizing departments that have been isolated islands of information, and trying to run them enterprise-wide.

Among corporate applications, HR has been a laggard. HR managers have closely guarded sensitive information as employment, compensation, benefits and training, and HR systems have been largely isolated from other business functions. The HR function is heavily automated because it is very labor-intensive.

More than ever, companies want to consolidate information about employees, for example, to assess whether a worker's skill matches the compensation and cost of employment. And HR and other departments need access to financial data to cre-

ate customized reports on demand, for example, to see if their spending is within budget. This requires changes to the organization and to equipment, software and databases, which may be incompatible across departments.

So far, many companies have handled HR and accounting functions either by outsourcing them to service bureaus or by building their own custom software. However, most corporations installing client/server systems are buying off-the-shelf HR and accounting software from a growing number of vendors. There are about 1,500 such programs available, most of which focus on specific HR functions. But fewer than 100 of them can support every aspect of HR.

Corporations buying targeted or best-of-breed applications for client/server environments have: It could take two years to integrate such programs with other existing applications. Compared to mainframes, client/server systems add layers of complexity when software is integrated. And even if an interface is designed between payroll and general ledger, say choose in either the payroll or general ledger systems might require a complicated change to the interface.

Some users are trying to give various business departments electronic access to financial data. Today most access to accounting information is through paper reports, but we expect

to see financial data made available to other departments electronically.

Another trend is the convergence of HR and financial applications to evolving industry-standard suites

such as IBM/Lotus Notes

and Microsoft Office.

More core business functions will likely be written to these evolving industry standards to link to other functions on the desktop.

As corporations continue

to downsize, the growing overlap of departmental functions will create new linkages. Companies will need to draw through data finance and accounting to make payments for health, welfare, COBRA and payroll to eliminate double entries and possibly errors. Because changes to such practices will impact organizations broadly, new software is being driven by decision support and e-commerce vendors.

Workflow software may provide the answer to difficult integration issues. A company could estimate everything it needs to do in payroll, and then have the system automatically move on to the next task in the organization. The difficult part is identifying all the tasks that need to be done, assigning an order to them, and then finding out who is the organization is responsible for them.

Despite the effort needed to merge financials, HR and other functions, downsizing organizations that streamline will have a distinct business advantage.

Brown Group Chooses PeopleSoft Solutions

With \$1.5 billion in annual sales, Brown Group, Inc. of St. Louis, Missouri has worldwide operations in the sourcing, marketing, and retailing of footwear for men, women, and children.

In 1993, Brown Group's two international divisions merged. The task fell to Bob Goldsticker, director of financial systems and import services, to find an accounting system for the new organization. His team selected PeopleSoft General Ledger and PeopleSoft, Accounts Payable.

"PeopleSoft gave us a single solution for our international needs," Goldsticker says. "The data structure and the flexibility of reporting will allow each office to meet its unique needs. France has some very specific statutory requirements, and the software will enable them to set up one reporting scenario completely different from Brazil, which would be completely different from Italy. PeopleSoft provided the technology solution, the global solution, and the functionality solution that were required...I think it's made our users much more effective."

It took only 90 days to get PeopleSoft Accounts Payable up and running. A month later, PeopleSoft General Ledger went live. In another year, Brown Group's Hong Kong office was using PeopleSoft, taking full advantage of the AP system's multicurrency capabilities. According to Goldsticker, "In Hong Kong they're using multiple bank accounts in multiple currencies, whereas in St. Louis we use a single bank account in a single currency." The team also easily customized its PeopleSoft applications so the wiring of monies could be handled more smoothly.

Kathy Franke, project manager for human resource applications, led a second implementation team that brought up PeopleSoft Human Resources and PeopleSoft Payroll for all 6000 U.S. employees. "Now people can access their own data," says Franke. "Also, our data is more accurate because it is updated real-time and not in batch."



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services model. So you can imagine a defined collection of business events, and a set of application functions together with an application framework — maybe repository-based — that kicks off the appropriate service(s) in response to each event. You can also imagine that some of these events arrive from the outside world (such as orders), and some arrive

number of applications may be invoked to assist in this processing, although as a final step, the item must be decided within the context of the workflow. (This particular user is aided by the fact that all the applications are integrated at the desktop — a key contribution of the client/server paradigm.)

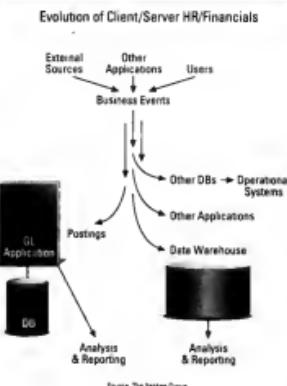
This same user has access to certain application services within the purchasing application, to help the requestor generate an order that will immediately meet the approval of the purchasing department. To purchasing, an approved purchase order arrives electronically in the form of a message, from "somewhere in the enterprise." To the general ledger, there is a series of postings.

The concepts of workflow and process flow take these applications far beyond the idea of client/server. What is being produced is work and data flow that can not only fit the entire business process, but allow the business process to change over time. Client/server, including its application to workflow, decomposes the application into a series of steps. These steps can themselves be changed (sometimes independently), and, through workflow, they can be rearranged. Client/server and ubiquitous desktops, plus the workflow concept, allow process designers to freely include virtually anyone in a process step.

Summary

Today, vendors of financial and HR applications are pushing both the scope of their business functions and the envelope of advanced distributed computing architectures. Some have very different visions; some are at different stages of development; but they are all taking a discernible direction.

What users need are business solutions, not technology. But it is technology that is currently bringing the benefits. The ability to mold (and modify) an application to fit the evolving needs of a business process; the ability to provide up-to-date information to not just report on, but to manage, a business; the ability to integrate large numbers of applications in a way that retains flexibility — these are as much business goals as technology features. And, the new technology is in turn allowing vendors to expand the scope and functionality of these applications. This market is on its way to reaching a new plateau. ■



from other applications (such as a ledger entry). And that the events are represented in the form of messages.

Now, imagine that an event is up — say, a requisition for a machine to facilitate a project has been submitted. There is a business process that takes in that requisition. There are many steps in the process, and some of them involve people. To the initial requestor, he or she is submitting a request to an internal service, and will get a reply (and hopefully the machine). To the many persons that must approve and/or record this request, there is simply another item in their in-basket to process; and any



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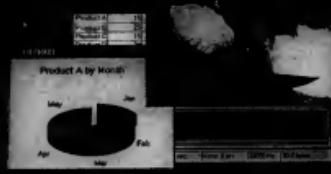
COMING IN THE SEPTEMBER 18 ISSUE OF COMPUTERWORLD



About 70% of all reengineering projects are not delivering expected results. There are two reasons, argues James Martin, this month's Leadership Series author: Management often ignores the impact on the company's culture when implementing change, and management typically doesn't understand how to implement information technology when making change. The solution, Martin says, is to hire a full-time Enterprise Engineer. As an integral member of the senior management team, the enterprise engineer understands people, IT and business change methods. He will be working at your company soon.

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Desktop Computing

PCs AND SOFTWARE • PORTABLE COMPUTERS

Starfish's Sidekick, Dashboard ready for Windows 95

By Stuart J. Johnson

As the rush to ship Windows 95 applications snowballs, one of the first out the door is also one of the first popular utilities for MS-DOS.

Starfish Software, Inc., in Scotts Valley, Calif., is shipping a new version of Sidekick — called Sidekick 95 — and an update of its Dashboard utility for Microsoft Corp.'s Windows 95, according to Philippe Kahn, the company's chairman.

Kahn, who founded Borland International, Inc., also in Scotts Valley, bought the rights to Sidekick and Dashboard when he founded Starfish earlier this year.

Lean and mean

Like the original Sidekick, the new version features small, quick utilities for busy business users. They include a word processor with a spell checker and a sophisticated personal information manager (PIM) with a calendar, to-do lists, expense reporting and a telephone auto-dialer.

"I use the to-do lists, appointments calendar and the card file [PIM]," said John Maple, field manager for electronic maintenance at Robinsons-May, a unit of The May Department Stores in Industry, Calif. "I'm going to start using the expense reporting [as well] because I spend a lot of time in the field."

In addition, Sidekick 95 features a daily almanac that lists times for sunrise and sunset, moon phases and zodiac signs. It also has a utility that displays what Kahn calls "earths time." That feature displays a map of the globe as well as what time it is anywhere in the world.

"It's the first time that there's a PIM for right- and left-brained people," he explained.

The company will roll out a workgroup version of Sidekick

sometime early next year, according to Kahn.

Starfish is also shipping a version of its Dashboard utility for

Hook, line and sinker

Starfish will try to lure users with the following Windows 95 utilities:

SIDECHECK 95

Price: \$49.95

• Word processor with spell checker

• Personal information manager

includes:

- Calendar

- To-do lists

- Expense reporting

- Phone auto-dialer

• Daily almanac

• "Earth time" shows global times

DASHBOARD 95

Price: \$49.95

• Tabbed Quick Launch

• Resource gauges

• AppOrganizer

• Windows 95 tool panel

Windows 95 Dashboard was designed to help users navigate in Windows 95 by providing a "dashboard like you have in your car," he noted.

Dashboard 95 includes the following new features:

• Tabbed Quick Launch: Users can organize applications in user-defined tabbed folders.

• Resource gauges: Task-style gauges let users track usage of key system resources such as available Windows 95 memory, disk space or CPU use. Warnings will be issued when they are running low.

• AppOrganizer: Automatically organizes programs into Quick Launch folders, which helps ease the migration to Windows 95 by retaining familiar Windows 3.1 application groups.

• Windows 95 tool panel: Single-click access to the most-used Windows 95 facilities, including Explorer, Network, Neighborhood, Recycle Bin, Finder and Printer Setup.

Sidekick 95 and Dashboard 95 each cost \$49.95.

Win 95 users to foot the bill for support

Hardware vendors respond to anticipated request uptick

By Jaykumar Vijayan

If you want technical support for Windows 95 from your hardware vendor, plan on paying for it.

Driven by estimates of dramatically increased support call volumes and call lengths, PC vendors are migrating rapidly to fee-based technical support options for Microsoft Corp.'s Windows 95.

A recent report from market researcher Datquest, Inc., in San Jose, Calif., shows that with the exception of NEC Technologies, Inc., and Toshiba America Information Systems, Inc., every other major PC vendor has begun sticking substantial price tags on Windows 95 support.

The report states that while actual charges may vary from vendor to vendor, on average the industry now charges just over \$31 per incident for Windows 95 support. The average per-minute charge for such hand-holding is \$2.24.

Incidents are typically how-to questions relating to actual use or execution of an operation within an application. It is a fee that vendors charge to resolve a single problem or incident.

Join the club

One of the first vendors to begin charging for such calls was Compaq Computer Corp., which introduced fee-based support for bundled operating systems and applications as far back as January. Since then, almost all vendors have followed suit.

"There is a sort of comfort in numbers for these vendors, knowing that they are not the only ones that have fee-based support," said Elena Christopher, an analyst at Datquest in Framingham, Mass.

Apart from free installation, configuration and start-up support, almost all vendors charge for usage or how-to support, according to Datquest. This is a departure from what customers are used to getting from hardware vendors for bundled operating system support, Christopher noted.

"Customers today are getting charged for something they were receiving mostly for free," she said.

Analysis said the reason is quite simple. Windows 95 support could prove crippling to hardware vendors if they didn't charge for it.

"There is no way around it. It's incredibly expensive for a

Pricing parade

A sample of hardware vendors' Windows 95 support pricing.*

IBM: Free for entitled large accounts. All others can purchase support in single (\$35) or multiple incidents (five for \$169, 10 for \$329) or \$2.99 per minute.

Hewlett-Packard: \$20 per incident or contractual help desk assistance

Compaq: Free, \$35 for consumers

Dell: \$39 per incident or go-day and annual contractual packages

*All vendors provide free installation, configuration and setup support

Source: Datquest, Inc., San Jose, Calif.

hardware vendor to support the operating system," said Ted Julian, editor of "The Gray Sheet," an industry newsletter published by International Data Corp. in Framingham, Mass.

The Datquest report estimates that initial call lengths for Windows 95 support could be double — roughly 20 minutes — the length of the average Windows 3.1 query. Similarly, call volumes are expected to go up anywhere between 20% to 25%, especially from the consumer market, analysts said.

The steep training costs and costs associated with beefing up support infrastructures have also pushed hardware vendors toward a fee-based support model. Furthermore, software vendors are beginning to point customers to alternative sources of technical help such as on-line services, bulletin boards and fax-back services, Julian said.

Some users are rather blasé about the whole thing. "Does it surprise me? No. Does it irritate me? Yes," said Roger Culp, microsystems analyst at Amiens Lake Insurance Co. in Lincoln, R.I.

Culp said he had never gone much to hardware vendors for operating system support, but now there is even less reason to do so. Most of the time he has turned to reading material from outside sources, including the Internet, where "there is a lot of information being shared by companies on topics like those all the time," Culp said.



Bulking up

Gateway 2000, Inc., and Compaq Computer Corp. offer two examples of what hardware vendors are doing to beef up their support infrastructures for Windows 95. Gateway claims it has given more than 50 hours of specialized Windows 95 training to more than 1,000 of its estimated 1,700-person support staff. Compaq, which says it has also augmented its support staff, is preloading each support person's PC with product databases, reference tools and on-line technical manuals that provide ready access to a wide range of information.



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Win 95 vs. OS/2

CONTINUED FROM PAGE 1

Configuration

The ability to configure software and hardware is a lot easier with Win 95 than with OS/2. Often, Windows 95 automatically senses changes in the hardware and software, sometimes requiring a reboot.

OS/2 is less friendly. For example, OS/2 requires a complete reinstallation of Soundblaster device drivers and a reboot just to change an interrupt setting.

Communications

Both products have exceptional support for communications and connectivity to the Internet. Both provide connectivity to their own systems or other third-party services. OS/2 provides Notes Express, and Win 95 includes Exchange.

With caution

Through its extensive beta testing and marketing, Win 95 supports a large number of systems and devices. As happened with earlier Windows releases, some manufacturers are playing catch-up to write the required new drivers.

Users should exercise caution when upgrading computers that use any exotic or unusual expansion board or say portable computer with a docking station or PCMCIA cards. Systems in these categories may find a crucial driver or missing from Windows 95.

For example, one 486 system had to abandon its 3-year-old SCSI caching controller for a slower standard controller because the manufacturer wouldn't write the required driver. Multimedia systems using lesser-known sound boards must get the required driver from the manufacturer if it doesn't ship with Win 95. Worse, portable users may find the network connection or CD-ROM drive on their docking stations is useless without a new driver.

PC cards also require an annoying two-step installation process: first installing Windows 95, then manually installing the 32-bit PCMCIA support through the Control Panel. After installation, we discovered the Xircom, Inc. combo V.92/10BaseT Modem-Ethernet card worked flawlessly. But we lost one of our Zenith Data Systems 2-Player portable CD-ROM drive because drivers for its PC card interface aren't available yet. — *Chris DeRome*

DeRome is a reviewer, author and speaker on PC technology who works in Seattle.



Money well spent

Although Windows 95 provides network administrators with useful installation tools, a software distribution service — such as Microsoft's Server Management Services (SMS) package — can reduce cost and offer better control for a massive, wide-scale deployment of Win 95.

For distribution, SMS supplements the Windows 95 NetSetup program. SMS can also distribute the Windows 95 package to all locations within the enterprise, which is particularly useful for geographically dispersed organizations.

SMS can automatically prepare a machine for the upgrade by running necessary cleanup, disk defrag-

Advantage, Mr. Gates

Microsoft may have gained an edge when building Windows 95 by learning from what IBM did well with OS/2.

Feature	OS/2 Warp 3.0	Windows 95
Handled products	4 ★ ★ ★	★ ★ ★
Configuration	★ ★	★ ★ ★
Communications	★ ★ ★ ★	★ ★ ★ ★
Documentation	★ ★ ★	★ ★ ★
DOS compatibility	★	★ ★ ★ ★
Ease of use	★ ★ ★	★ ★ ★ ★
Fault management	★ ★	★ ★ ★ ★
File system	★ ★ ★	★ ★ ★ ★
Installation	★ ★ ★	★ ★ ★
Multitasking	★ ★ ★	★ ★ ★
Networking	★ ★ ★	★ ★ ★
Pricing	★ ★ ★ ★	★ ★ ★
Windows support	★ ★	★ ★ ★ ★
Overall average score	3.8 stars	3.4 stars

Documentation

OS/2 came with much more documentation than Windows 95. Win 95 provided the bare minimum, which wasn't a problem. But I like to take the manuals away from the computer to read, and with Win 95, most of the documentation is on-line.

DOS compatibility

OS/2 failed on this one. I installed a DOS game, and it failed to run properly when focus was switched to the desktop and then back to the DOS session. Win 95 automatically senses DOS screen modes and memory requirements, OS/2 doesn't.

Ease of use

While there was a little learning curve with Win 95, it proved a lot more intuitive than OS/2. Creating a folder in OS/2 can be a challenge; the task is two clicks away in Windows 95.

Fault management

The fault management in Win 95 is the best I have seen yet in a PC operating system. If an ill-behaved application decides to crash, Win 95 allows you to terminate the session and continue working. It was a very easy process to overtask OS/2 and cause it to freeze without any messages or ways to recover without rebooting.

File system

Windows 95 supports the use of long file names. OS/2 doesn't. OS/2 also requires some special steps for supporting hard drives larger than 32MB bytes. Win 95 comes with the option of using disk compression via Doublespace.

Installation, multitasking

In these areas, OS/2 and Win 95 are very comparable. Both systems handle multitasking well unless a DOS session is being used, which slows the systems significantly.

Windows support

Although OS/2 has a Windows support mode, it isn't fully compatible. My attempt to run SimCity 2000 for Windows — a good test bed because it exercises the operating system more than many commercial applications — failed. The Windows support in OS/2 is for Windows 3.x applications and doesn't address the issue of Win 95 compatibility.

Unless you have a specific need to use an OS/2 app, Win 95 is the clear winner in functionality and compatibility. If Windows 3.x was in existence for another year or two, OS/2 would have been a serious contender for the PC desktop. However, Win 95 is here now, and it is clear that Bill Gates took a hard look at OS/2 before releasing Win 95.

Trisbile is a senior business analyst at Huster Industries in San Marcos, Calif. He can be reached at trisbile@powergrid.electrie.com.

mentor and backup software before the upgrade. SMS can also force the upgrade using a specific Setup script for the computers.

Finally, SMS can control the time of the upgrade (such as after 6 p.m. or in middle of the night) and the amount of network traffic devoted to the upgrade. The latter feature is useful when other critical applications must also run over the same network.

At a 100-node level, SMS costs \$849 per server, and client licenses cost \$34.95 each. At least one SMS server is required per location, and SMS also requires a server (the same server or another one) running the 8000 Microsoft SQL Server. Although rolling out Win 95 may not justify the added cost, automating the rollout with additional applications, coupled with the remote management features of SMS, may be worth the price.

— *Chris DeRome*

Briefs

IBM closes deal

IBM has completed its purchase of the assets of GE Capital Systems Support Services, which provides maintenance for PCs and LANs. The deal was first disclosed in early May.

Adaptec RAIDs the Mac

Adaptec, Inc. in Milpitas, Calif., recently announced it will offer RAID data storage systems for Apple Computer, Inc.'s Power Macintosh, beginning this month. Adaptec will integrate the Rescus software from its recently acquired subsidiary, Trillian Research, with its newly announced AHA-2540W SCSI accelerator for the Power Macintosh. The products target Macintosh users in the digital video and desktop publishing markets. Pricing was not announced.

Software rates NT boxes

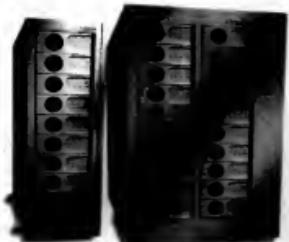
Business Applications Performance Corp. (Bapco) in Santa Clara, Calif., has announced the availability of Sysmark for Windows NT, benchmark software for measuring the performance of both RISC and CISC-based computers running Microsoft Corp.'s Windows NT. The benchmarks are based on a suite of standard applications such as word processing, spreadsheet, project management and presentation graphics. The software costs \$495. Bapco is a non-profit association formed by several leading industry vendors, including IBM, Microsoft, Compaq Computer Corp., Intel Corp. and Lotus Development Corp.

IBM settles lawsuits

IBM settled patent infringement lawsuits with Compaq, Peripheral, Inc. and Kyocera Corp. IBM and Compaq had sued each other; IBM in 1993 accused Compaq of infringing some data storage patents, while Compaq retaliated this past March by accusing IBM of violating its PC power-conservation technology. As part of the settlement, IBM signed a five-year deal to buy Compaq disk drives. The Kyocera suit involved charges by IBM that the Japanese company infringed its PC patents.

Intel updates

Intel has updated its basic motherboard design. The new ATX motherboard will feature environmental improvements such as quieter performance and improved reliability through increased integration of components such as sound. The product will cost at least \$11 less for manufacturers.



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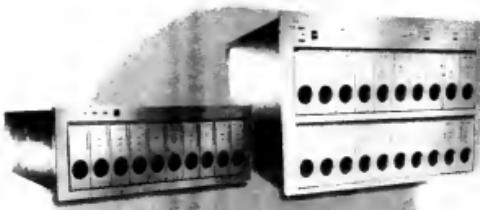
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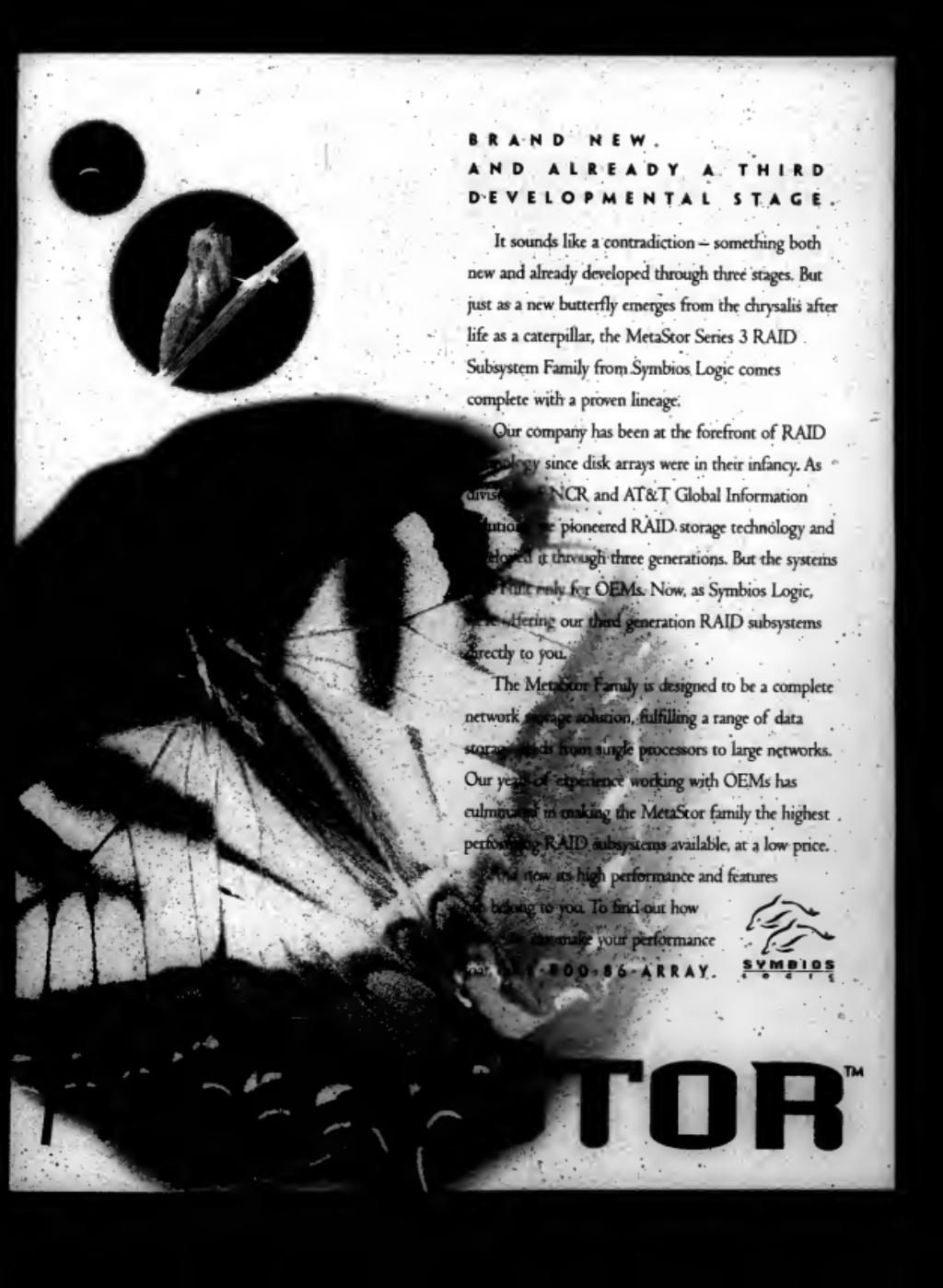
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IBM makes big point without big splash

Quietly promotes OS/2 amidst Windows 95 hype

By Lisa Pierrille

Don't look for IBM to promote OS/2 by painting its logo on the Eiffel Tower or plastering the Brooklyn Bridge with its Warp moniker.

Big Blue instead is quietly countering Microsoft Corp.'s Windows 95 all-out media megablast with a few well-placed print advertisements, a snappy TV ad and head-to-head comparisons of OS/2 and Windows 95.

Industry observers said IBM's minimalist marketing approach is the right one.

"With the amount of noise right now [from Windows 95], I'm not sure anyone would bear them," said Any Wohl, editor of "Trends Letter," an industry newsletter in Narberth, Pa. "The best thing for [IBM] to do right now is to sit still. They should let the Windows 95 hoopla calm down and then when there is a pause, market into the gap. Otherwise, IBM would just be wasting [its] money."

So, just as Microsoft launched Windows 95, IBM ran a three-page spread advertisement touting 570 premier OS/2 customers. That ad showed up in computer trade publications and major daily newspapers around the world. At the same time, IBM took out single page ads in *The Wall Street Journal* and *The New York Times*. The text-laden ad spelled out OS/2's rosy future, even now that Windows 95 is shipping.

Big Blue on tour

IBM is currently sponsoring a tour. No, not the Warp Tour, which is a nationwide alternative music festival featuring the bands Quesckand, Fluff and Garbage — names IBM and OS/2 are better off not associated with — but the *Dare to Compare Tour*.

Dare to Compare has several of IBM's top OS/2 marketing executives talking to editors and industry analysts and giving head-to-head comparisons of OS/2 Warp and Windows 95.

To highlight some of the limitations of Windows 95's most touted features, for example, IBM showed how Windows 95 users can create shortcuts to quickly launch applications or files. But if the original program or file is renamed or moved, the shortcut no longer works. IBM was quick to point out how OS/2 Warp is still able to track and launch the file even if it is renamed.

IBM also kicked off last weekend its overall brand marketing campaign, called Solutions for a Small Planet. The new series of TV ads made its debut during the U.S. Open tennis tournament, which IBMponsors.

Included in the campaign is an OS/2 Warp ad, which replaces a wildly popular OS/2 ad featuring the Czech nuns.

STILL IN THE BING

IBM's OS/2 response to Microsoft's Windows 95 media megabit

- A three-page advertisement touting 570 of IBM's premier OS/2 customers run in computer trade publications and major daily newspapers around the world.
- IBM ran a single-page ad in *The Wall Street Journal* and *The New York Times* the week Windows 95 was launched.
- The *Dare to Compare Tour*: Several of IBM's top OS/2 marketing executives are meeting with editors, reporters and industry analysts to give head-to-head comparisons of OS/2 Warp and Windows 95.

new ad features a group of people lost in a Brazilian rain forest who find their way using OS/2 Warp Connect.

Message is clear

The ads focus on OS/2 Warp Connect's ease of use, its ability to connect to other computers and how powerful it can be even in the most adverse conditions, according to a spokeswoman for IBM's Personal Software Products division.

IBM said the TV ads aren't intended to be a direct response to Windows 95 but are timed to coincide with the start of the fall television schedule. This is the season when many advertisers typically kick off their campaigns.

"For us, it's business as usual," the IBM spokeswoman said. "We do not intend to try and compete with the Windows 95 noise. That product has been overhyped hopefully."

In the meantime, IBM is focused on getting Warp Server into beta testing, getting its already-delayed version of OS/2 for the PowerPC out of beta testing, delivering its Family Pack of OS/2 games and preparing a migration utility that lets Windows users run their applications on OS/2 Warp.

Industry analysts estimate that to date, IBM has already spent more than \$2 billion to market and develop OS/2. Microsoft was reportedly spent more than \$800 million on its Windows 95 campaign.

Pinnacle Micro, Inc. has introduced Apex, a 5 1/4-in. rewritable optical drive for desktops.

According to the Irvine, Calif., company, Apex has a capacity of 4.65 bytes and uses a SCSI-2 interface. It was designed for general data storage and data-intensive applications, including digital audio, digital video, desktop publishing and disk archiving.

Apex features an optical library interface connection that can install into jokeboxes for increased capacity and performance.

Pricing for Apex starts at \$1,895.

► *Pinnacle Micro*
(714) 789-3000

Microtech Conversion Systems has announced ImageMaker CDR, a product for recordable CD duplication.

According to the Santa Clara, Calif., company, ImageMaker CDR has one master and duplicates as many as six full discs per hour in a two-drive configuration. It includes a 486-based computer system with a keyboard, monitor, 3.5-in. hard drive, 4X read drive, two 4X recorders and full software.

ImageMaker CDR features true bit-for-bit duplication and read-after-write verification. It tracks the number of good discs produced and reports quantity and time for each job. It copies CDs for any operating system, including Macintosh, Unix, OS/2, DOS and proprietary systems.

Pricing for ImageMaker CDR starts at \$19,750.

► *Microtech Conversion Systems*
(415) 424-1174

Ontrack Computer Systems, Inc. has unveiled Disk Manager 7.0, a disk installation utility.

According to the Eden Prairie, Minn., company, Disk Manager 7.0 lets users exploit the capacity and performance capabilities of their hard drives by maximizing the performance and capacity of integrated drive electronics (IDE) and enhanced IDE disk drives.

Disk Manager 7.0 helps users overcome the basic I/O system limitations that are common in older computers and restricts usable hard disk drive capacity. It also eliminates the need to manually select drive models and parameters.

Disk Manager 7.0 is compatible with IBM AT, 386- and 486-based and Intel Corp. Pentium-based computers.

Disk Manager 7.0 costs \$125.

► *Ontrack Computer Systems*
(612) 937-1107

Axon, Inc. has unveiled Solo 2.1, report production software for the Apple Computer Inc.'s Macintosh and Power Macintosh.

According to the Stamford, Conn., company, Solo 2.1 addresses the requirements of graphic artists and management consultants by making a company standard for client reports and presentations.

The company also said Solo 2.1 includes features for storyboarding, document management, format management, drawing, word processing, charting and displaying slide shows and tables.

Pricing for Solo 2.1 starts at \$1,495. Bulk pricing is available, according to the company.

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Workgroup Computing

LANs • SERVERS • SOFTWARE FOR GROUPS

Bridging the gaps

AlliedSignal Aerospace will use collaborative computing to shrink distances

By Jean S. Bozman
TORRANCE, CALIF.

Distance is no friend to a large manufacturing company's engineering process. Factory people often ask for last-minute design changes, and engineers have to travel hundreds of miles to fix the problem on-site.

At \$4.6 billion AlliedSignal Aerospace, a group of pilot projects is aimed at shrinking those distances by using collaborative computing. The tests, which were launched this spring, involve less than 100 people and allow engineers to exchange video, drawings and documents from their desktops. Right now, teleconferences are widely used along with dedicated videoconference units with PictureTel Corp. equipment.

"Our biggest issue is that we're a rather distributed company that would like to appear far more centric both to us and

to our customers," said Ken Pickar, senior vice president for engineering and technology, who works on process improvement. In time, collaborative computing could extend beyond the corporation's walls. "We think it'll help pull us together with our suppliers," he said.

The firm is using a remote computing technique called virtual co-located computing (VCL) that uses Unix workstations to host desktop videoconferences and display shared drawings and documents. Information systems managers here said the same technology can be extended to becled-over Intel Corp. Pentium-based PCs as long as the PCs have video cards and enough memory.

AlliedSignal Aerospace Chief Information Officer Paul Hoedeman said the technology should reduce product development-

ment time and cut travel costs. "Speed is the biggest thing we're after," Hoedeman said. "We'll have fewer misunderstandings and handoffs — it's like working in one location."

One recent experiment that linked engineers with those at an outside airplane customer's site reduced engineering time by one-third, ne-

COMPUTING

Smaller groupware vendors won't play second fiddle

By Saruchi Mohan

It is the big guns that get the most attention when it comes to groupware — Lotus Development Corp., which popularized the concept, and rivals

Microsoft Corp. and Novell Inc., which are positioned themselves to cash in on a potentially explosive market.

But there is a whole second tier of companies trying to get a piece of the pie. So great is the hype surrounding the Big Three that the efforts of these smaller players, each seeking to break from their traditional electronic-mail business to go into groupware, have gone largely unnoticed.

Except, of course, by those who are using products from these companies. On Technology Corp. in Cambridge, Mass., and SoftArc, Inc. in Markham, Ontario, are small players trying to find a place in a brave new world. And despite their size, they seem to have gathered a loyal band of followers.

Keeping it simple

Andy Stadler, a senior software engineer at Catalyst Entertainment, Inc., an online video game service in Cupertino, Calif., is using On Technology's Common Knowledge, a workgroup collaboration product. Stadler said he doesn't plan to migrate to a larger product as his company grows in size.

"Bigger products have an accompanying jump in complexity. I prefer the simpler product. Most of the bells and whistles of bigger products are not used," Stadler said.

The fledgling Common Knowledge offers bulletin board service and document collaboration, and pricing ranges from \$37 to \$77. It doesn't create conversation threads or workflow or integrate

Vital statistics

Company: AlliedSignal Aerospace
1994 revenue: \$4.6 billion
Employees: 36,000
Engineers: 8,700
IS staffers: 800
Major sites: Torrance, Calif.; South Bend, Ind.; Tempe, Ariz.; Phoenix; Teterboro, N.J.

according to Hoedeman.

The firm is testing VCL at several sites. But the primary pilot project links an en-

ableddSignal, page 58

AlliedSignal

With On Technology's E-mail and calendaring/scheduling products.

But users don't seem to mind the lack of features that are taken for granted in collaborative computing environments.

The key, Stadler said, is simplicity. Alan R. Frank, national partner in charge of enabling technologies at KPMG Peat Marwick in Radnor, Pa., agreed.

Frank evaluated Notes and a beta version of Microsoft's Exchange before an advertisement put him onto SoftArc's FirstClass. Its simplicity and openness impressed him, he said. Frank has installed FirstClass as a groupware product, using its conferencing, bulletin board service, threaded messaging and gateways to other services. Priced at \$495 for five-user licenses, FirstClass doesn't offer calendaring/scheduling or document management with versioning control.

The problem with Notes is it "assumes everything goes into a Lotus Notes database. We want information from all databases, not just Notes. FirstClass sets as a navigator across all kinds of databases," Frank said.

Its information-sharing capabilities have also worked well for Emory University in Atlanta, said Sean Murphy, project director at the school. Many of the larger beginner classes supplement teaching with information sharing. Students can use this forum to post questions or hold discussions with faculty.

But Matt Cain, a vice president at Meta Group, Inc. in Stamford, Conn., said these second-tier companies face an uphill challenge. "These smaller companies have to be vastly better, focus on more niche markets or go horizontal and come up with some industry-specific technology" to survive, he said. "If they continue to focus on the email to medium business, they might find a niche." But survival in corporate America will be much harder, he said.

Notes to replace paper cables from foreign posts

By Mitch Bette

WASHINGTON

Employees at the U.S. Information Agency (USA) are hoping CableXpress will put an end to "cable diving," the frantic effort to find a specific foreign message in a file cabinet or among mounds of paper.

CableXpress is a customized application of Lotus Development Corp.'s Notes groupware product developed for managing cable traffic at USA. The foreign affairs agency uses 10 million pieces of paper a year to print out cables, which are telegrams from outposts in 147 countries.

Trashing the paper

But the mounds of paper are on the verge of being replaced by CableXpress, which filters and routes the incoming cable traffic to specific PCs and displays the user's read and unread cables. The application has Lotus' Smartviews to facilitate navigation, annotations, forwarding and drafting of replies.

Perhaps most important, there is a two-year cable archive that can be searched using various criteria and key

words to find that urgently needed cable.

CableXpress will be rolled out to the entire agency by year's end, but the beta testers at the Office of African Affairs are already enthusiastic supporters.

Mark Larson, East Africa desk officer in the African Affairs office, said he especially likes the archive and search ca-

CableXpress, page 69



U.S. Information Agency

Budget: \$1.4 billion

Employees: 3,798 in the U.S. plus 960 Foreign Service personnel overseas

Scope and mission: 212 posts in 147 countries to promote U.S. interests

Programs: Educational and cultural exchanges, Voice of America broadcasts, liaison with foreign news media

Workgroup Computing

Choosing Windows solutions

Conference maintains focus on Windows 95; some lean more toward NT

By Cheryl Gerber

On the heels of Microsoft Corp.'s Windows 95 launch, the recent Windows Solutions conference maintained the focus on the 32-bit operating system but also emphasized Windows NT and networked client/server programming solutions.

The majority of software at last week's show in San Francisco offered users a choice "between developing on Windows 95 or NT," said Jason Berst, an analyst and editor of "Windows Watcher," a newsletter in Redmond, Wash.

Gupta Corp., in Milpitas, Calif., announced it has begun shipping its SQLBase for Windows 95, a relational database for workgroup servers and mobile computing. The company also demonstrated the Windows 95 version of SQLWindows, a multidatabase, object-oriented development environment. SQLWindows will be available in Windows 95 and Windows NT versions in December.

Overall, there were more Windows 95 tools shown than their NT counterparts, but that will change, Berst said. "We predict most of these tool vendors will release NT versions within the next year," he said.

Some corporate developers, however, aren't interested in building programs using Windows 95. "Our customers have not asked for Windows 95 solutions. Until they do, we won't be doing a lot of development for it," said Bob Coven, president of InterAccess Corp. in Totowa, N.J. The company develops custom client/server solutions for Fortune 500 customers.

The alternative

Instead, Coven said, his clients are leaning more toward using NT as a development platform. "I don't think people want to make the transition now. Windows 95 is a step in the direction of NT, so why not go there now?" he said.

However, Gupta expects to sell the Windows 95 versions of its software as a client engine and peer-to-peer server, with NT as a multiuser server, said Rehan Syed, product marketing manager at Gupta.

PowerSoft Corp. and Symantec Corp. also had a large presence at the show, both in the Windows 95 arena. PowerSoft's Watson division announced database and language products, and Symantec announced a new version of its C++ compiler.

Infrared market eliminates hassles for mobile users

By Shelly Blodgett

The dream of every laptop PC user is to lose the unwieldy cables providing connectivity to desktops, peripherals and printers.

The growing use of infrared technology in connection devices and notebooks is going a long way toward answering those prayers. Infrared light, which is the unseeable method used in television, remote controls, is an increasingly popular medium that allows mobile users to switch files between their notebooks and desktops.

Point-to-point infrared carries for several feet only. But as a relatively inexpensive medium — it costs only a few dollars to build in — notebooks with infrared connectivity are becoming standard.

New entrants

Two products have joined the infrared market. Lemark International, Inc. in Greenwich, Conn., recently announced MarkNet IR, a high-speed infrared device that eliminates the need for switch boxes or cables when transferring files between an infrared portable computer and a desktop or printer. MarkNet IR will sell for \$250 and will be available later this month.

According to the company, MarkNet IR can be connected to a desktop PC or printer and includes two high-speed, bidirectional parallel ports, an external power supply and wireless file transfer technology.

It transmits data at speeds up to 1.152M bps/sec and distances up to 9.75 feet. It has been certified by the Infrared Data Association (IrDA).

The IrDA standard has been set for multiplatform support and compatibility for directed, point-to-point infrared connectivity.

Parallelo Computing, Inc. in Alameda, Calif., a software and hardware provider, recently announced AirDock. The adapter offers wireless, infrared links for Apple Computer, Inc.'s PowerBook portable computers. AirDock and AirPaks, Parallelo's connectivity software, sell for \$70 and are available immediately.

A neat alternative

Ken Dulaney, an analyst at Gartner Group, Inc. in San Jose, Calif., said the new products "add a tremendous amount of convenience when you travel."

"You don't have to travel with the tangled-up mess of cables in your bag," Dulaney said. "When you walk into your office, you can just point your laptop at your desktop, and you're all set."

Dulaney said the real revolution in infrared connectivity will come when hotel and airport telephones feature "infrared windows," eliminating the need for telephone couplers to send data.

Symplex introduces device to link LANs, support telecommuters

DR-1/PRI uses ISDN technology and serves as high-end router

By Bob Wallace

Remote access vendor Symplex Communications is shipping a high-end, dual-function device and a low-cost, Windows-based application to manage it.

The DirectRoute DR-1/Primary Rate interface (PRI) uses integrated Services Digital Network (ISDN) technology and can serve as a high-end router for connecting large LANs. It can also function as a hub that supports telecommuters with ISDN Basic Rate Interface lines (BRI) (see chart).

"We're using the product to support a document imaging application where documents are scanned in Cleveland and then distributed over the PRIs to offices in Dallas, L.A. and Washington," said Dave Gustafson, a senior operations planner at Plimley-Bowes Management Services in Hartford, Conn. "It offered the best price/performance of any product we could find."

Analytic said the product was designed primarily for mid-size sites with fast-growing data communications needs.

"This is not a mainstream remote office product," said Kathryn Korostoff, president of Sage Research, Inc. in Natick, Mass. "The ideal use for it is for sites with heavier data communications needs than remote offices: sites with applications like file transfer and database mirroring."

DR-1/PRI features

The stackable DR-1/PRI has one Ethernet port, a PRI port that provides 23.04K bps/sec. data channels and one 64K bps/sec. signaling channel and two serial wide-area ports. The device's two serial WAN ports can support switched 56K bps/sec. connections, frame relay and leased lines. It comes with a built-in network access unit, instead of relying on stand-alone units that can cost a few thousand dollars.

The new Symplex product is intended for use in large internetworks because it provides 512K bps/sec. bandwidth, which is about four times more capacity than four ISDN BRI lines.

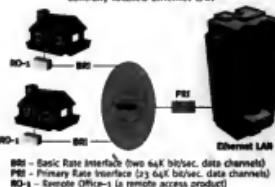
It can also concurrently support up to 25 remote sites in a telecommuting application.

DR-1/PRI also routes protocols, including IP, Novell, Inc.'s IPX, Digital Equipment Corp.'s DECnet and Apple Computer, Inc.'s AppleTalk. It can forward up to 4,750 packets per second, which means it has the capabilities of regular routers.

Gustafson said Symplex handled the coordination of getting PRIs from the local carriers, "which would have been a nightmare for us to do on our own."

Telecommuters connect

Symplex's DR-1/PRI enables telecommuters with ISDN BRI lines to dial in to end users and servers linked to a centrally located Ethernet LAN.



Users have long been reluctant to use ISDN PRI lines across multiple regional Bell operating company territories because each user has different ordering and provisioning procedures.

Symplex also announced DirectRoute Manager, a Windows-based Simple Network Management Protocol application for handling DR-1/PRI. It can be used to collect and analyze data and generate reports on DR-1/PRI usage.

By tracking line use and usage costs, network managers can bill back-end users for the use of the network.

DR-1/PRI costs \$4,696, and DirectRoute Manager costs \$495. The latter requires an Intel Corp. 486 PC or higher, Windows 3.1 or later, 8M bytes of RAM and 25M bytes of hard disk space.

Ask most Lotus[®] Notes[®] users, and they'll tell you the benefits speak for themselves: Custom business applications that slash cycle times, redefine operational efficiency and eliminate paper. Financial returns that International Data Corporation calls "simply staggering." A rapid application-development environment that is quickly becoming the client/server tool of choice.

Yet to a systems administrator, all this collaborative computing can imply huge challenges — not to mention the potential hassles in administering far-flung networks. Without a reliable and manageable infrastructure for messaging and groupware, and the tools to maintain it, no distributed computing architecture can live up to its business potential.

What IS teams need are practical ways to

- Deliver reliable systems for users while minimizing costs
- Develop and deploy mission-critical applications across geographies and heterogeneous computing platforms
- Provide efficient and responsive end user support.

For all these reasons, Lotus Notes offers elegant solutions to the common challenges around managing groupware and messaging networks.

The Notes View on Network Management

Trying to manage a network without real-time information on traffic flows is like working with a blindfold. NotesView,[™] Lotus' graphical management tool, literally gives administrators a picture of how a network is functioning — including statistics on mail delivery, replication, and database server performance. Alert mechanisms point out mail routing bottlenecks or disk space availability issues, allowing administrators to act

before end user service levels are affected. Any server in the Notes environment can be accessed from a single administrative console, allowing you to centralize server support while retaining the flexibility to locate servers for optimal performance or minimal telecommunications costs.



NotesView also supports the industry-standard management protocol, SNMP, allowing you to leverage the expertise of your IS staff and a wide array of SNMP-based tools.

Application Development and Deployment

Notes comes with an integrated application development environment that allows you to rapidly develop robust workflow applications that can integrate with your legacy systems and even access external data sources like the World Wide Web. Notes' unique replication technology distributes applications

and data across diverse computing platforms and geographies, and synchronizes Notes directories. As a result, administrators can manage application deployment from anywhere in the network.

Notes also lets you automate repetitive administrative actions, such as recertifying user IDs. Moreover, Notes lets you centralize administrative tasks such as setting up replication topologies for the enterprise, while tasks such as adding new users can be performed at the local level.

The Product Is the Solution

Custom help desk applications built with Notes technology are available from Lotus or many of the over 10,000 Notes business partners. Notes' built-in workflow capabilities can route service requests to the appropriate support specialist automatically, even paging them if necessary, and Notes lets you track these calls all the way through to resolution. Finally, Notes lets you store a complete history of each incident in a secure database, providing a rich knowledge warehouse for the future.

The bottom line for today's administrators is that the better you can manage your systems, the more valuable you become to your business units.

Managing groupware cost of ownership is only one way that Lotus is helping thousands of organizations attain competitive advantage. And they're doing it with one product. Lotus Notes.

Lotus
Working Together[®]

AlliedSignal

CONTINUED FROM PAGE 55

engineering group in South Bend, Ind., with a manufacturing plant in Rocky Mount, N.C., that makes fuel-control systems for aircraft engines.

That project, which started in May, uses Hewlett-Packard Co. Unix workstations at each end of a dedicated T1 net-

work link. Several Pentium-based PCs at both sites share the same link. All computers use insoft, Inc.'s Communicate software for on-line videoconferencing and small cameras atop the PCs and workstations. In addition, the PCs use Microsoft Corp.'s Windows for Workgroups to exchange documents.

Before VCL, engineers could push video "frames" and revised documents nationwide, said Tom Klimek, a senior staff engineer in South Bend who in-

stalled the desktop systems. "What this environment gives us is a natural situation where the users talk and draw and see each other as they work," he said.

Time for a change

The test has already pointed to some necessary changes, including boosting the video frame rate from less than 15 frames/sec. to a full-motion rate of 30 frames/sec., Klimek said. The firm is dialing up only part of its T1 bandwidth, often

using just 256K bytes/sec., users said. At some sites, upgrades for VCL links could involve rewiring some of the older buildings and speeding up long-distance data links, IS managers said.

Other pilots include one in Teterboro, N.J., that is linking staffers who work at home and allowing them to share data and tap into teleconferences. And a fall pilot test of PictureTel technology for PCs will allow some IS executives to evaluate desktop videoconferencing and file sharing for wider use in the company.

An evaluation of the South Bend/Rocky Mount link is set for the fall. If it succeeds, similar projects will move to other sites and funding will accelerate next year, Pickar said.

ON SITE

AlliedSignal Aerospace

Torrence, Calif.

Challenge: To reduce product development time by creating on-line links between computers used in engineering and manufacturing.

Technology: Dedicated T1 network links, Unix workstations and Intel PCs with video boards, onboard cameras and file-sharing software.

Results: Pilot projects are testing whether collaborative computing can boost productivity and reduce costs.

Evaluation of a key project is planned for fall. If the pilot is successful, spending for desktop videoconferencing will accelerate in 1996.

Briefs

Unison ports scheduler

Unison Software Corp. in Santa Clara, Calif., said its Maestro job scheduling application is now available for Minnesota Corp.'s Windows NT operating system.

The first release of Maestro for Windows NT lets users schedule jobs on NT servers from Unix systems running NT. Within six to 12 months, Maestro users will be able to schedule jobs on NT networks independent of Unix. Separately, RSA Corp. in Boston announced a new version of SQL Operator, its Unix-oriented job scheduling application. NT support will be added by year's end.

Lotus holds seminar

Realizing that Notes implementation is an expensive and time-consuming process, Lotus Consulting Services is offering third-party developers a two-day seminar for roughly \$1,000. It provides guidelines on best practices and tools called by Lotus Consulting.



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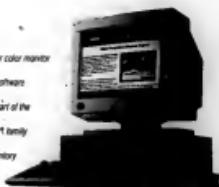


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CableXpress

CONTINUED FROM PAGE 55

pability. "We can search for a cable we should have received but didn't. We can find a reference without having to remember the cable number. We can search for it by date, by subject or by number and find it within seconds," he said.

"Last month we had an experience where someone needed to find a cable, and all they knew was the person's name. With the old system, we could still be looking for it and maybe never have found it. With CableXpress, we found it instantly," Larson added.

Carl W. Vesper, director of the USA's Network and Systems Support Division, said the Department of State and other foreign affairs agencies — which still use paper — have already expressed interest.

The *Netwinder* application runs on eight

The Notes application runs on eight Compaq Computer Corp. Pentium servers and can support 250 simultaneous users, Verner said.

tem means staffers get their cables at least a half-day sooner, so replies go out quicker. Cables and replies can be routed around the office via a link with the agency's electronic-mail system from Da Vinci Systems Corp.

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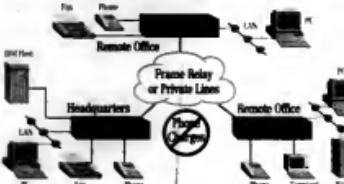
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MCI sets its sights beyond long-distance

By Neal Weinberg

MCI Communications Corp. is giving its long-distance telephone service a high profile via its television ad war against AT&T Corp., but the real action is going on off-camera.

MCI is trying to rapidly transform itself into a full-service provider of electronic commerce, offering one-stop shopping for customers.

The company's challenge is to convince users who are familiar only with

MCI's phone service that it is also an industrial-strength supplier of Internet access, on-line banking and other electronic services, analysts said.

And the company must win over users who can choose competing services from major computer industry players such as Microsoft Corp. and IBM. The race is still in its early stages, but analysts say MCI has staked out an enviable position through moves such as its deal with Rupert Murdoch's News Corp. [CW, Aug. 14].

Robert B. Wilkes, an analyst at Brown

Brothers Harriman in New York, said MCI views long-distance service as a commodity and that the company's long-term plan is to move into as many value-

added markets as possible. That means Internet access and electronic commerce.

Booking up

Just last week, MCI announced a deal with First Union Corp., the ninth-largest bank holding company in the U.S., to offer Internet banking to customers of the \$83 billion Charlotte, N.C. bank.

First Union will give interested customers copies of Netscape Communications Corp.'s Navigator and offer Internet access beginning in November. The service will cost \$4.95 a month, with the first five hours per month free.

MCI will provide the customized Netscape browser, manage the network and handle on-line banking transactions.

MCI, page 65

Start-up preps all-in-one switching system

By Bob Wallace

Start-up Xylan Corp. last week announced a new core for its year-old OmniSwitch that analysts say will support more LAN switching options than any other switch on the market.

Once equipped with the 13.2G bit/sec. OmniSwitch Asynchronous Transfer Mode (ATM) switching core, OmniSwitch will let users support Ethernet, Token Ring, Fiber Distributed Data Interface, Copper Distributed Data Interface and 100Base-T "fast" Ethernet switching.

OmniSwitch can support more LAN switching options than switches from market leaders, which include the Big Four: Cabletron Systems, Inc., Bay Networks, Inc., 3Com Corp. and Cisco Systems, Inc.

The enhanced OmniSwitch will save users money by allowing them to use a single system to support their LAN switching needs. LAN switching pro-

vides higher and dedicated bandwidth for demanding client/server applications as opposed to legacy LANs.

The prospect of buying a product that

LAN switching is concerned and are presumably headed toward ATM. An [all-in-one box] would be pretty appealing,"

Analysts say OmniSwitch will put Xylan

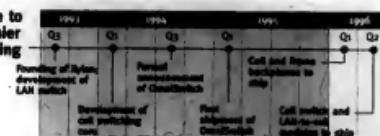
and more immediately usable than higher-speed 155M bit/sec. interfaces," said Christine Heckert, director of broadband consulting at Telechoice, Inc., a Verona, N.J., consultancy.

Vendors that already offer ATM at 25M bit/sec. switching include IBM, start-up First Virtual Corp. and Optical Data Systems, Inc. Those offering Token Ring switching include 3Com and Bay's Centillion Networks business unit.

But Xylan may have more competition by the time it ships OmniSwitch in the first quarter of 1996 and 25M bit/sec. modules in the second quarter.

The nine-slot OmniSwitch costs \$13,000, with 25M bit/sec. ATM ports priced at \$500 and 155M bit/sec. ATM ports priced at \$1,500.

Xylan's rise to battle premier LAN switching vendors



includes as many LAN switching options as possible user interest.

"That sounds like something we would take a good look at," said Phil Wood, a staff member at Los Alamos National Laboratory in New Mexico. "We're working to determine what we need as far as

is on the short list of vendors — which includes 3Com and Bay Networks — that offer ATM, Token Ring and 100Base-T switching.

"The fact that the switch can be equipped to support 25M bit/sec. ATM ports is critical, as they are less expen-

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TAMING THE TERABYTE

Interactive Data Warehousing: Providing rapid response to ever-increasing numbers of users

BY MICHAEL H. FORSTER

President, InformationCONNECT Division, Sybase, Inc.

DECISIONS, decisions. They're enough to drive us crazy at times in our personal lives, though, these can drive us to ruin if we make the wrong ones.

Every business decision is a moment of truth based on a complex set of data and variables. For instance:

- What have our customers been buying? What haven't they been buying? What types of incentives might induce them to buy now, not later?

- What actions are our competitors taking?

- How is the economy at large impacting buying decisions?

- How do our costs compare to the last five years?

- What are the explanations for significant variations from plan?

So many questions, so few solid answers. The answers are usually locked up in the transactional systems that run our businesses, systems that were never designed to be queried by analysts for decision support. Only since the mid-1980s have we been extracting data from operational systems for analytical purposes using specially written COBOL programs. Those were the days of the information center, staffed by programmers who coded end-user queries and ultimately produced

weekly, monthly or quarterly batch reports.

Asking questions

There's a funny thing about asking questions, though. More often than not, one question leads to another and another, and often before you actually get to the answer that you

need to make a decision, you need to ask five, six or a dozen or more questions, analyzing the answer to each one before posing the next.

The emergence of client/server query tools made life a bit easier for the inquisitive analyst or decision maker. Knowledge workers could generate their own queries directly against various operational databases without the involvement of information center programmers.

On the surface, this worked fine, but the user still needed help with questions like: Where is the data I need? How is the data structured? How do I relate or join one piece of data to another? Nonetheless, things were better for the business user. This led to a growth in the number of knowledge workers querying these databases, which led to potential performance slowdowns on the transactional systems. Clearly, a better solution was needed.



Michael H. Forster

Recent surveys show that more than 70% of Fortune 1000 companies have data warehousing projects budgeted or underway. The business areas most frequently addressed by these projects are database marketing, customer information systems, sales and finance.

While there is much interest and activity, the cost and time commitment to get these projects off the ground are substantial. Today it costs \$3 million to design and deploy the average warehousing application, and it typically takes six to 18 months to get the application up and running.

And this is not for anything particularly fancy, mind you. Conventional warehousing applications today consist of extracting basic business data from operational systems, editing or transforming it in some fashion to ensure its accuracy and understandability, and moving it by means of custom programming or sneakernet to the newly deployed analytical database system.

This extract, edit, load, query system might be acceptable if business life were very, very simple and relatively static. But it's not. If there is a single constant in the real world, it is change. In the operational systems,

changes include large volumes of new data being added, changes to existing data, new data structures in existing databases and even whole new databases being added.

Today's conventional warehousing solution in the face of these ongoing changes amounts to the process described above plus a lot of prayer that something unknown to us didn't change since the last time the process was initiated.

A better idea

When Sybase unveiled the Warehouse WORKS framework last year we knew that there was a lot more to data warehousing than moving data from OLTP to DSS repositories, and we knew that customers wanted more than a prayer-based solution to their decision support needs.

We began by introducing a framework that would provide an open, flexible infrastructure upon which customers could build warehousing solutions. Warehouse WORKS was designed around four key functions:

- Assembling data from multiple sources
- Transforming data for a consistent and understandable view of the business
- Distributing data to where it is needed by business users, and
- Providing high-speed access to the data for those business users.

Assembling data from multiple sources is a key issue, given the heterogeneous nature of today's large enterprise. A comprehensive architectural solution is a prerequisite to bringing data warehousing into the mainstream.

Sybase's Enterprise CONNECT family of interoperability products provides this architecture. It brings a critical suite of common API and heterogeneous platform support capabilities to any data warehousing solution.

4 Database Warehousing

The Enterprise CONNECT architecture and its associated suite of products, installed in over 700 of the Fortune 1000, enables you to:

- Transparently access the data you need without having to understand the underlying complexities of multiple databases
- Move data to where it's needed, when it's needed, using Sybase's near-real-time replication or bulk copy capabilities
- Manage the environment, and
- Build applications with the tools of your choice (more than 125 of

**Today, the average
warehousing application
costs \$3 million to design
and takes six to 18 months
to get up and running.**

which have been certified to interoperate with the Sybase family of products, thus eliminating the need for you to take on the added role of systems integrator.)

Automation replaces prayer

Once data is assembled, it must be transformed and moved rapidly into the warehouse. It is here that warehousing solutions often fall short. Warehousing for the 21st century is about replacing the prayers I mentioned earlier with products and processes that automate the building and updating of warehouses, as well as the important process of metadata management and synchronization.

Metadata, of course, is data about the data in the operational systems. To date, little consideration has been given to what additional metadata will be needed for the warehouse. Understanding exactly what systems the

data has come from, when it was extracted, when it was last refreshed, and how it has been transformed, for example, can make all the difference between a warehousing application being reliable or not.

Sybase will continue to expand its leadership in data movement and open APIs. Our intent is to deliver products designed for the rigors of data warehousing and eliminate the need for prayer-based warehousing. Our new product, code-named Conveyor, will automate the rapid unloading and loading of databases, as well as the process of managing metadata. The product's purpose is to reduce the custom programming costs incurred in the implementation of warehousing applications.

Rapid response

Rapid response to end-user queries against the data warehouse database is essential. Without the kind of response that enables you to move quickly through a series of questions in order to arrive at a decision, the whole point of data warehousing is essentially moot.

Business users are an impatient bunch, and rightfully so. The window for making decisions in the marketplace is growing smaller and smaller as competition increases and product life cycles shrink.

Parallel processing is an effective solution to a number of specific bulk processing problems such as list management and batch reporting. It can also enhance response time for queries when you've got less than half as many users as processors.

And SYBASE MPP (formerly known as Navigation Server) has been designed and optimized to handle just these types of operations. SYBASE MPP harnesses the power of multiple SYBASE SQL Server engines working in parallel with a sophisti-

cated parallel optimizer and shared catalog, with proven performance over 200GB.

Many users have found, however, that while parallel processing is certainly a powerful and important technology, it simply can't deliver the rapid response they want on its own.

In particular, when you have more users than processors, or when end users are running complex, unplaned queries against the warehouse database, even parallel processing can leave users waiting for hours—maybe days. With no idea of when their answers will be forthcoming, what's the answer to this dilemma?

Bit-mapped indexing

Pete Estler, the president of d-Intellect, the division of EDS that specializes in the development and implementation of marketing information warehouse solutions, answers, "The type of interactive response necessary for marketers to do their jobs effectively can be achieved by using advanced bit-mapped indexing. That's why we've embraced SYBASE IQ as a key feature in our overall marketing and system capabilities."

SYBASE IQ is an optional extension of SYBASE SQL Server. It enables users to achieve response times on their existing hardware up to 100 times faster than a standard relational database. SYBASE IQ offers even more than this 100-fold query performance improvement. It also slashes warehouse query costs.

The result of these improvements is what I call "warehousing for the many." Imagine two systems running 64 processors. On one system, relying just on parallel processing, one user can run one query and have a result in 2½ minutes. On the other system, however, running on the same hardware but employing SYBASE IQ, 32 users can run 32



Sybase offers optimized options — as well as industry-leading middleware and de-facto standard development tools — to meet your special needs.

queries and receive their answers in under a minute. Which solution would you choose for your business?

I mentioned earlier that the fourth key component of warehousing was transformation. And in that area, Sybase has formed strategic partnerships with a number of companies specializing in this technology including Carleton, ETI, Informatics and, most recently, Prism Solutions to fully leverage Sybase's Open APIs for more transparent warehouse administration.

In fact, Sybase has just unveiled the industry's largest data warehouse alliance program.

Key to success

In planning and deploying data warehousing applications that will serve organizations' needs into the 21st century, begin with an open and flexible architecture that enables:

- Rapid deployment of warehousing applications

- Low entry cost
- The ability to plug and play best-of-breed warehousing products, and
- The ability to begin small and grow over time

You also need to look beyond this year's piece-part warehousing offerings. The 21st century solution is an open, integrated solution that reduces the risk of failure, reduces the cost of implementation and maintenance and ensures the integrity of the data through automation of warehousing processes. The 21st century solution must also be able to respond to the decision support needs of ever increasing numbers of business users in a truly rapid, interactive fashion.

In short, it should be a solution that enables you to make the right decisions for your business.

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TECHNICAL OVERVIEW

Client/server application vendors must show their warehouse savvy

BY BARRY WILDERMAN

Program Director of Application Development, META Group

SEVERAL HUNDRED companies have delivered their first prototype or production data warehouse, often a small implementation (less than 10GB) built by end-user departments such as finance and marketing. Many large organizations pursuing data warehousing projects are also implementing client/server applications, particularly financials.

At first blush, both IT and end users can easily conclude that the basic client/server application architecture can also support a data warehouse initiative. After all, many client/server applications are implemented with merchant RDBMSs and come packaged with the sort of tools required to support data warehouses. However, there are reasons why the two initiatives must be separated.

- Because file structures in client/server applications are designed for OLTP, the underlying number of tables can be quite large (e.g., more than 700). These tables contain many coded fields, and indexing algorithms are implemented to support short, fast transactions. Access to these complex file structures is valuable only when metadata is created for the user, facilitating audit-style analysis of the transactions.

- Data warehouse-style queries often involve a series of interactive, ad hoc analyses, and will dramatically interfere (particularly where

full table scans are required) with the subsecond response time required for heads-down data entry (or access) in financial applications.

- Data warehouses require collecting data from disparate sources. Input data from client/server packages, therefore, should be just another source of data input to the data warehouse. Moreover, data warehouse design often involves a high degree of denormalization (aggregates, product names in a variety of tables, etc.) Database design for data warehouse initiatives, therefore, differs from OLTP-style design for client/server applications.

Most client/server application vendors are now concentrating on delivering a rich feature set, improving front-end GUIs, and achieving scalability through partitioning. By 1997, META Group believes most application vendors will routinely offer data warehouse compatibility, with consistent toolkits for both data warehouse and client/server application reporting and analysis, replication/copy management from application file structures to the data warehouse, and availability of the underlying application structures in modern CASE tools and products from leading repository vendors.

Some client/server application vendors have already made data warehouse-oriented additions to their product lines. Still, warehouse initia-

tives are rarely centered around the package vendor. Warehouse-focused vendors, such as Sybase, are pursuing extract technologies to incorporate data from client/server packages into their own warehouse architectures.

In preparing client/server application RFPs, IT should include a list of requirements to determine whether the package vendor can successfully interoperate with the multiple vendors required for a successful data warehouse implementation. Requirements should include:

- Materializing the underlying tables as entity-relationship diagrams in CASE and repository tools.
- Data replication/copy management from the application to the warehouse.
- Metadata replication to the data warehouse (consistent with approaches provided by Sybase partners Prism, Carleton, and ETI).

- Interoperability with standard middleware.
- Overlapping tool sets with decision support workbenches (report writers, query tools, EIS products).

- Bottom Line: As IT implements both data warehouses and client/server applications, underlying file structures must be kept separate. Application vendors must demonstrate their "data warehouse savvy" in areas like data and metadata replication, middleware interoperability, and consistent decision support toolkits.

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Database marketing comes of age

IN TRADITIONAL marketing philosophy, the individual customer is seen as an anonymous part of a larger whole — a faceless unit in a greater statistical universe. But for companies on the leading edge of marketing, the customer is no longer just a face in the crowd.

Fueled by technological advances, companies are making great strides in what is known as one-to-one, pinpoint, target, relationship or database marketing. Businesses are forging new relationships with their customers by learning about their individual preferences... and responding to them.

By emphasizing the individual, database marketing makes possible "pull" marketing techniques in which customers are able to let the company know what their preferences are — a more effective approach than "push" marketing, typified by large (and expensive) direct mail blitzes, cold telephone sales promotions and blanket advertising campaigns.

It's all part of a new business trend. Companies are becoming more customer-centric than business-centric, notes David Raab, president of Raab and Associates, a consulting company that tracks direct marketing technologies. "Today, companies have much more contact with the individual customer. The infor-

mation gained is funneled back into large databases and then distributed out to the point of customer contact within the organization," he says.

Cost savings alone, Raab claims, make the implementation of these database marketing systems worthwhile, in fact, they will amortize a company's investment in hardware, software and implementation in a

very short time. For example, targeted database marketing promotions can realize 50% to 100% higher response rates than conventional direct mail.

Having a customer-centric point of view helps a company discover what individual customers are buying, know how often they've been contacted and see which marketing

Telia gets the complete picture

When Telia, the largest Swedish telecommunications corporation, realized it was not able to provide timely information to its customers about products and services, it began its search for an open distributed architecture. Telia's legacy IBM and Unisys centralized mainframe systems lacked the flexibility to support the growth of its customer base, which was expected to soon reach 8 million customers. Also, the data residing on the mainframes was not accessible by users.

After evaluating the technologies available, Telia standardized on SYBASE SQL Servers. Open Client and HP's 9000 S/800 Servers. Telia selected Sybase and HP over Oracle and IBM due to their proven open systems leadership and connectivity solutions to heterogeneous data sources. The connectivity solutions allowed them to maximize their mainframe investment

and the wide selection of integrated software tools facilitated modular application development.

"HP and Sybase have enabled us to achieve productivity savings through shorter application development times and a higher degree of flexibility in implementing new applications and support our business needs as they evolve," says Lennart Lilja, manager of technical strategies for Telia.

All Telia employees now use an integrated system that runs on PC clients, giving them an easy-to-use GUI. The new HP and Sybase system provides a complete picture of the customer as well as information about related services, prices, installation times and products — all at subsecond response times. With an estimated 8 million customers to serve, Telia couldn't afford to settle for anything less.

Would you try to sail the ocean without a sturdy boat,
reliable maps, and a compass?

Probably not. Not when you know your survival depends on having the right tools to get you safely to shore. So why would you risk tackling the equally formidable job of navigating and managing your oceans of legacy data without the right tools?

Tools like the ETI-EXTRACT™ Tool Suite - which makes the job of collecting, cleaning, transforming and transporting your data as easy as point-and-click.

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Whether you're building a data warehouse, migrating or re-engineering applications, or simply moving

to a new platform or database system, your data - like the ocean - is constantly changing. And your users' demands for information are constantly changing, as well. Only a tool set as powerful as the ETI-EXTRACT™ Tool Suite can help you quickly and cost-effectively keep up with so much continual and unpredictable change.

So - before you set out to navigate your oceans of data, don't you owe it to yourself - and to your users who depend on you - to have the right tools?



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strategies have been most effective at the level of the individual. Unfortunately, in many corporations the necessary data is not readily accessible and analyzable by those charged with making critical marketing decisions. It's not that the raw data isn't available. Many organizations have already made inroads on the problem of amassing large amounts of customer transaction information. The challenge is that traditional OLTP-oriented database technologies have not been able to allow marketing analysis and others to rapidly slice and dice millions of records from the desktop.

The sheer size of marketing databases can be a problem, in some instances, census data can have as many as 900 fields of information. Externally maintained marketing systems can often be saddled with a built-in six-week lag between the time a transaction occurs and the time the marketing department learns about it. Furthermore, not only does customer transaction history

change constantly, but internally, the types of questions that users will want to bounce off this dynamically evolving information will change as well.

Until recently, the technology

Targeted database marketing promotions can realize 50% to 100% higher response rates than conventional direct mail.

simply has not been available to handle the volumes of data and the need for rapid, flexible response and interactive analysis that marketing strategists need to mount a proper database marketing effort.

The situation is changing. IS organizations are now able to enlist the support of open, client/server-based data warehouses and flexible, fast

query engines. Technological solutions are being created that allow IS to meet the demands of their users, who are grappling with this new dynamic marketplace in which the customer is king.

The technological requirements IS organizations face to implement these solutions are demanding. The database marketing system must provide rapid response so that users can interactively and iteratively analyze their information. The tools that users employ to make these analyses must be easy to work with and accessible to a broad spectrum of the organization's business units... perhaps even to its customers.

For many IS managers, this is a big problem. Tiley, Lochridge and Associates surveyed 27 companies with over 500GB of critical data who had attempted to set up data warehouses and database marketing systems. More than 70% of them failed in their initial efforts. In the process, these pioneers learned that creating

Warehouse lets planners do routine tasks quickly

As the fifth largest electrical utility in the U.S., Entergy Corp. supplies power to 2.5 million residential and commercial customers in Louisiana, Texas, Mississippi and Arkansas. Its facilities include fossil fuel and nuclear plants and other sites throughout the region.

Delivering information to these diverse locations isn't easy, especially when data must be accurate, timely and consistent throughout the company. To further complicate things, Entergy's corporate information is spread across diverse sources, such as IMS and DB2 mainframe repositories, Oracle systems, and Sybase client/server applications.

In keeping with the company's overall migration toward client/server,

Entergy has created a 54GB SYBASE SQL Server data warehouse on Sun SPARC Server 2000s that currently delivers financial materials-related data to a range of corporate personnel, and will soon incorporate customer and human resources information. Initially designed to streamline the production of monthly variance reports, and to provide an ad hoc decision support environment for corporate planners, the warehouse has substantially expanded in scope to provide a foundation for data integration and delivery across multiple business systems. It also offers a sophisticated dual-level processing environment that specially prepares predefined sets of data for use in high-end decision sup-

port applications.

According to data warehouse manager Boris Bosch, the system is playing a major role in ensuring that Entergy can maintain its status as a leader in the industry. With the Sun/Sybase data warehouse, planners can do routine things quickly, which means that they have more time for complex data manipulation, the comprehensive monitoring and analysis that are necessary for success in our industry's highly competitive markets.

"The Sun/Sybase data warehouse gives top-level planners more time to work on complex tasks, and better information with which to devise competitive business strategies," says Bosch.



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The best news is this: Pyramid has a Starter Kit Program to get you up and running right away. We'll come in, identify your business needs, and show you how the Smart Warehouse works. Why? Because Pyramid is out to prove that the Smart Warehouse is just what you need to stay competitive—and out to prove that your ROI will be unexpectedly high.

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PHOTOGRAPH BY
RONALD D. HARRIS

this kind of infrastructure is an evolutionary process, not something that can be dropped into place overnight.

Alternative Approaches

There are a number of alternatives for implementing database marketing; all have their disadvantages. Four of these approaches are:

- **Service bureaus.** Service bureaus specialize in gathering and cleaning data and generating lists. They are usually expensive, provide slow access to information and, because they operate primarily in a batch mode, offer limited query flexibility.
- **Custom-designed database marketing applications.** Among their drawbacks, designs that do not accommodate multiple users with differing needs and delayed availability of transactions for analysis. These systems usually require a highly structured data model that is difficult and costly to change.
- **Multi-dimensional databases.**

These allow fast-query response to pre-defined queries but cannot provide flexible access to detailed data, are designed more for financial analysts than marketers, and come with a high overhead, ballooning the original

The most viable solution to database marketing draws on the resources of the data warehouse.

initial data to as much as 100 times its original size.

• **Standard relational technology.** This technology is very flexible. But its performance for ad hoc analysis is below par, and, in many cases, the data schema must be restricted to boost performance. Traditional indexing technology can add significant overhead in both time and disk resources.

Recent Solutions

The latest and most viable solution to database marketing draws on the resources of the data warehouse. This approach is now being used to assemble data systematically; transform it into a consistent format for business use, distribute it where it is needed, and furnish high-speed access with popular query tools.

The largest collegiate bookstore in the United States is the Harvard Coop. Located in Cambridge, Mass., in the middle of Harvard Square, the Coop, as it's called ("rhymes with 'loop"), uses Sybase IQ (Interactive Query) to access company-wide sales data. Sybase IQ incorporates brand new "bit-wise" indexing technology, designed to provide rapid response to the ad hoc analytical queries that come from off-the-shelf SQL generating query tools.

The Coop system draws data nightly from remote point-of-sale terminals into a Data General server

Stanford raises the level of its financial analysis

Stanford University, one of the nation's leading academic institutions, is comprised of seven schools: Business, Law, Medicine, Humanities and Sciences, Engineering, Earth Sciences and Education. Stanford's structure is complex and decentralized, posing a classic problem: Vast quantities of data were stored in a mainframe in a form that users found difficult to access and use.

To address this problem, Stanford has implemented a data warehouse to provide enterprise-wide decision support for end users. The data warehouse accesses information from all facets of the organization, including research, student activities, human resources, and finance.

Stanford's data warehouse runs on

Sybase System 10 on a Sun Sparcstation 20 with 512 MB of RAM and 25GB of disk storage. For query and reporting, the team needed a tool that provided cross-platform support, a user-driven analytical process, data pivoting, and over the long term, the capability for enterprise-wide deployment.

After evaluating several products, Stanford selected BusinessObjects from Business Objects, Inc. in Cupertino, Calif.

BusinessObjects was rolled out in November 1994. The 50 users of the system — analysts and administrators at units such as the offices of the provost and comptroller, as well as middle managers — can now do structured and ad hoc queries from their Macintoshes and PCs. The number of

users is expected to increase to more than 120 by year-end.

Now, because cross-system searches and comparative reports are easy to do, more sophisticated financial analysis of the university's seven schools and many research and interdisciplinary centers is possible.

For example, users are looking at how private contributions and government funding are being used and where research dollars are going. Soon BusinessObjects will be used to understand the student population in terms of their course choices — what courses they are taking, how these choices change over time, which courses are stumbling blocks, and what resources the university can offer to help them get past these critical barriers.

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which holds 15GB of data. The data is downloaded to a separate Sybase IQ server which is accessed by 35 to 40 sales managers, buyers and key managers using PCs. Eventually the system will serve nearly 100 users. The Sybase software brings performance improvements of 10 to 100 times, allowing truly interactive access to sales statistics on over 1 million SKUs.

Database marketing systems have the added complexity of needing to generate large volumes of output in the form of mailing lists, as well as enabling interactive analysis for market segmentation, predictive modeling and cluster analysis, according to Jim McIlhenney, a consultant with EDS/dbIntellect, a firm that builds

database marketing systems.

Because most of EDS/dbIntellect's customers, according to McIlhenney, have "large problems to solve" over 5 million customer names to manage, typically over 100GB of data, "parallel table scan techniques are very important for producing bulk output."

Great promise

On the other hand, to satisfy the on-line access requirements, dbIntellect is evaluating the new parallel version of Sybase IQ. The software "has great promise," McIlhenney says. "The query speed is tremendous, and it is accomplished without a huge hardware budget. This is a major difference between better

indexing technology, like Sybase IQ, and other parallel query technology."

Sybase MPP is another tool that provides access to massive databases with hundreds of gigabytes of data. It is an open scalable database server ideally suited for use with symmetric multiprocessor (SMP) clusters and massively parallel processor (MPP) platforms. It makes possible a truly scalable data warehouse that gives users the flexible access to information they need to make informed, timely marketing decisions.

Massive databases

Sybase MPP builds on Sybase SQL Server to provide parallel high performance for complex information analysis and mixed workloads. It features parallel load, create index, backup and recovery, and integrated administration and configuration management tools.

Chase Manhattan Bank is using Sybase MPP on an AT&T 3600 parallel system that will ultimately store 500GB of customer, transaction and credit bureau data. Chase Manhattan expects that by using this data warehouse instead of a mainframe, it will save \$29 million in operational costs over five years, and allow online analysis of five years of credit card data on over 6 million customers.

Tools like Sybase IQ and Sybase MPP are making the promise of database marketing a reality. In the process, businesses adopting this latest approach to customer-centric marketing are realizing additional opportunities that translate directly to bottom line profitability.

Over the long run, database marketing leads to a greater understanding of the customer, which, in turn, leads to a mutually beneficial relationship between the buyer and the seller that has not been possible until now.

ETi cuts warehouse costs

Warehouse experts estimate that up to 80% of the cost in implementing a data warehouse is spent in writing and maintaining the interface programs required to load and refresh information in the warehouse.

Significant analysis is required to determine the "database of record" for every value in the warehouse, and even then, most of the values must be transformed into a form that is meaningful to end users. Moreover, these interface programs must execute with minimal impact on the operational systems from which they draw data.

One software product can help manage this process as well as contain costs. Fortune 1000 companies worldwide, as well as public utilities and government agencies, are using the ETI-Extract Tool Suite 2—the industry's leading data productivity tool for automating data collection, transformation and migration—to drastically cut the cost of data con-

version and migration for data warehouses as well as for application implementation and re-engineering.

Several of these companies use the ETI-Extract tools to build and maintain marketing-oriented warehouses. The tools enable them to use a point-and-click interface to specify the detailed instructions for searching sales, customer and product databases to retrieve the information relevant for a pinpoint marketing warehouse. Menu-driven interfaces allow users to specify business rules and transformations that need to be applied to the data. The ETI-Extract tools automatically generate and execute all of the necessary programs to populate and maintain the warehouse, as well as provide unique and powerful metadata management capabilities.

User experience indicates that the ETI-Extract Tool Suite can cut the cost of building and maintaining even the most complex data warehouses by 35% to 95%.

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Putting data into a warehouse is one thing. Getting it back out, however, is a different story.

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faster than today's technology—without adding hardware like parallel systems. It efficiently indexes all data, providing a complete map of your vital business information and eliminating costly, time-consuming table scans.

At Sybase, we view data warehousing as a process: assembling data, transforming, distributing and accessing it.

With our comprehensive Warehouse WORKS line of products, you can do all this and manage the process, in an open architecture that grows with you.

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<http://www.sybase.com/>. We'll
get you the answers you need.
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SYBASE
The Architecture for Change

The ForeFront Group, Inc. has rolled out GrabNet, an internet tool for browsers of the World Wide Web.

According to the Houston company, GrabNet lets users collect and organize information gathered from the Web and store it in customized desktop folders. It has a drag-and-drop tool for snapping text, images and uniform resource locators (URLs) for reuse and navigation.

GrabNet lets users categorize, file and revise collected information, and it allows users to post images or thumbnails with URLs for address and subject recall.

GrabNet is available for the Macintosh and Windows platforms. The product costs \$20.

► **The ForeFront Group**
(713) 951-1101

Three-tier model a go for Texas supplier

By Patrick Dryden

DALLAS

The top Texas construction materials supplier had to adopt a blueprint mimicking its original host-based system to build a firm foundation for its client/server re-engineering project.

Texas Industries, Inc., which supplies cement, concrete products, sand, gravel and aggregate materials throughout Texas and in parts of Louisiana and Oklahoma, sought an open, sensible alternative to its mainframe and terminals that could eventually handle forms imaging and other applications for 300 employees at 15 sites.

But after a year's struggle, network designers at the firm juked the common, two-tier client/server model that lets PCs access multiple database servers on LANs throughout a WAN.

"Others may think you can make that work, but it was a mistake for us," said Al Perry, director of information services at Texas Industries. "We tested continuously but couldn't get past all the different failures. We had a false expectation of client/server payback and the ease of making the conversion."

Among the problems when the project began in 1992 were the following:

- Developers had to try building functions to secure distributed databases into their industry-specific accounting applications because Oracle Corp.'s Oracle7, on which the project was based, was delayed, Perry said.

- Platform stability and disk I/O on the PCs servers proved inadequate, and DOS shortcomings caused instability throughout the network. "It was tough to live with Oracle and the developers, with PC database servers, with multiple vendors and with unstable platforms," Perry said.

- Austin, Texas-based NetSolve, Inc. designed a high-speed WAN for the heavy traffic load, "but we never taxed its bandwidth because we could only try one application at a time in that phase," Perry said.

If at first you don't succeed

The client/server project at Texas Industries took a couple of tries before it came out right.

Effort	Configuration	Results
First try: Two-tier structure		
Second try: Three-tier structure		

SEPTEMBER 11, 1995 COMPUTERWORLD

EllaShim Microcomputers, Inc. has introduced NetSafe, a workstation security product.

According to the Freshwater Pines, Fla., company, NetSafe can be set to automatically log off inactive network users. It includes automatic screen blanking and keyboard locking features. These can be set to take effect after a specified period; activation requires a password or hotkey combination.

Pricing for NetSafe starts at \$599 for a 60-user server license.

► **EllaShim Microcomputers**
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Briefs

General Magic FANs out

General Magic, Inc. has announced that three of its founding partners, Nippon Telegraph and Telephone Corp., AT&T Corp. and Seacor Corp., have formed a joint venture called NTT FAN, Inc. The new company will test an on-line multimedia communications service in Japan using General Magic's Teleporter and Magic Cap platform technologies.

3Com boosts APPN support

3Com Corp. has begun shipping NetBuilder Release 3.2, software for its NetBuilder routers. NetBuilder 3.2 includes an Advanced Peer-to-Peer Network (APPN) Dependent Logical Unit Requester (DLUR). The DLUR lets APPN natively carry traffic between IBM mainframes and peripheral devices such as terminals and point-of-sale machines. This feature will help users looking to move from legacy SNA subnetworks to APPN networks.

Nortel gets Companion

Northern Telecom, Inc. has obtained permission from the Federal Communications Commission (FCC) to operate its Companion Wireless Communications System for Business. The Companion system allows users to make and receive calls from anywhere in the workplace with free air time and roaming. Nortel will use a dedicated, unlicensed portion of the radio spectrum.

Win 95 analyzer nears

In addition to personal productivity and entertainment, Microsoft Corp.'s Windows 95 will also support network protocol analysis and monitoring. Cisco Networks, a subsidiary of J1 Systems, Inc., in Pleasanton, Calif., said it will ship NetXRay this month. The \$600 product taps Windows 95 multitasking on a desktop or portable PC to handle 100M bps/sec. or "fast" Ethernet as well as standard Ethernet, Token Ring and other LAN topologies. With it, managers can examine network traffic, statistics and alarms for troubleshooting and maintenance.

wo't be easy, Wilkes said, because consumers still don't trust on-line banking; they worry about security and aren't comfortable dialing into the Internet for a simple bank transaction.

Pressure from D.C.

But MCI doesn't believe it has much choice. A telecommunications reform bill currently before Congress would give the regional Bell operating companies access to the golden egg of the long-distance market, putting the squeeze on profit margins for the major long-distance vendors.

Jeffrey Kagas, president of Kagan Telecom Associates in Atlanta, said MCI's long-range vision is to be a one-stop shop for cable, telephone, cellular, Internet access and on-line banking.

Kagan said MCI is putting all the pieces of the puzzle together in a way that makes it a model of how the industry will evolve.

Instead of caving in, Texas Industries started over to achieve a network of open systems that information systems could easily adapt both centrally and remotely to new application needs.

Perry's IS team of 12 crafted the second network on a three-tier client/server model instead (see chart).

Cooperation

The PCs still share basic applications on Novell, Inc. NetWare LANs, but critical business functions reside at the headquarters here. Far-flung PC servers relegated to one central LAN now work as application servers, sharing access to a more capable database platform. Remote PCs run as terminals to query and update these central applications.

The changes mean "we have an adequate network in place for the future since we've isolated the true client/server traffic within a single LAN," Perry said.

Texas Industries also decided to work with IBM both on the hardware and software sides to eliminate finger-pointing. A single R5/6000 database server running AIX handles the heavy I/O. Five PC servers based on The Santa Cruz Operation's Unix act as clients to that database server while running the key business applications. That let the developers proceed without waiting for Oracle7, Perry said.

One EtherNet LAN lets these systems exchange data at 10M bps/sec. centrally instead of talking at 1.544M bit/sec. over T1 lines across the WAN. PCs emulate terminals to reach this client/server cluster, so only keystrokes and screen images traverse the WAN.

With the new system, users will get access to accounting and order processing applications. Next year, an executive information system and image-based orders will follow.

While Perry said he is satisfied with the three-tiered architecture, he is modest about it.

"I'd like to think we're so smart, going to a three-tiered design," Perry said. "But really, we were forced to."

MCI

CONTINUED FROM PAGE 63

Tom Bartolomeo, the bank's vice president of marketing, said First Union chose MCI because of the reliability of its network.

It is far too early to tell whether the project will be a success, but Bartolomeo said First Union's home page on the World Wide Web, which has been up since the beginning of the year, averaged 5,000 hits a day prior to the MCI announcement and 18,000 a day since.

MCI's move into electronic commerce

MCI has said it wants to derive half its revenue from services other than long distance by 2000.

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Cobol programmers, the Internet has not forgotten them

Although sessions with popular search engines on the word "Cobol" bring up pointers to the resumes of many individual data processing folks, supporters of the mainframe language are alive and well in cyberspace.

■ The Cobol Foundation recently launched a World Wide Web site at <http://www.cobol.org>. The Foundation, a nonprofit group of software and hardware vendors and Cobol professionals, wants to be the on-line resource for Cobol-related information, says director David McFarland.

■ At the site, users will find updates on efforts to revise the Cobol standard to include object orientation and other new features. Also, look for tidbits about job openings.

■ Wondering how Cobol handles arithmetic functions? Just remember why Cobol was invented in the first place? Visit one of several Cobol FAQs (lists of frequently asked questions) on the Web at <http://www.cs.ubishops.edu/hypertext/cobol/usenet/cobol-faq/faq.html>.

■ Access <http://www.cs.indiana.edu/hyperion/mayer/cobol/cobol.html> for a syntax guide and other technical information about Cobol. The page also houses links to related Web sites, including the home pages of major Cobol vendors.

■ If you're looking to hire people with Cobol skills, <http://www.cs.indiana.edu/itd/resources/seesee.html> is the spot to go to. It's the Mainframe Applicant Listing page of technical employment firm Kendall & Davis Resources' Web site. There, users can scan resumes, job histories and salary requirements on "data processing professionals in transition."

■ Finally, no Cobol education would be complete without a visit with the late Grace Murray Hopper, one of the creators of the language. The page <http://www.cs.yale.edu/HTML/VALE/CS/HyPless/Top/Files/hopper-wf.html> is titled "The Wit and Wisdom of Grace Hopper," and it is just that. Said Hopper, who died in 1992: "We've tended to forget that no computer will ever ask a new question."

By Mitch Beets

It has the Lego logo. It shows the familiar, colorful Lego toy bricks. It's called the Lego WWW Server, and it certainly looks like a World Wide Web site set up by Lego Systems, Inc., makers of the building blocks.

But it's not. The Web site is actually run by Lego fan David Kobla, president of Home Pages, Inc. in Mountain View, Calif.

Unauthorized commercial Web pages, which tout a company's products but aren't sanctioned by the company, are sprouting up on the Web. While that's fine, the unofficial sites also raise issues about whether consumers will be confused and whether corporate trademarks are being violated.

Kobla's Lego site sports product listings, pictures of home-built Lego constructions, project ideas, a history of Lego bricks and even a Lego theme song. It also has an offical-sounding address: <http://lego.wwwhome.com>.

However, the site does include a user disclaimer noting that it is not sponsored by the toy company.

Antithesis

Want to prevent folks from using screen-capture software to rip off your images? Write our copyrights, trademarks and brand equity very seriously, and we watch it very carefully, the Lego spokesman said. So far, though, no legal action has been taken against the unofficial sites.

Other organizations haven't taken such a benign view. The founder of an Elvis Presley home page reportedly

faces legal action from Elvis Presley Enterprises, Inc. and was forced to drop the Cyber Graceland Tour and other Elvis images.

Berny D. Weisz, a lawyer at Gordon & Glickson in Chicago, recommended that companies in

Lego's situation try to formalize the relationship with a contract, similar to "those used with fan clubs or user groups, that allows the unaffiliated boosters to use the trademark and copyrighted material."

"Now, it's flattery and free publicity, what if that changes?" The company has no control over the situation without a formal agreement, Weisz said.

"If you allow people to use a trademark without authorization, you're risking the loss of those rights."

Recently, some Web sites have taken to including the words "official" or "unofficial" in their names to avoid confusion. Examples include The Official U.S. Open Tennis Web Site, sponsored by IBM, and The Unofficial NBA Visual Directory, a guide to National Basketball Association players.

Hot products mean 'net gains

Aids to security lead Web releases

By Gary H. Antes

August may be a slow month for business in general, but it was the hot month for Internet product vendors.

Several companies started offering support for safe surfing. Computerix, Inc. said its new Internet Office Web Server is the first to support both the Secure Hypertext Transfer Protocol and the Secure Sockets Layer between a World Wide Web client and server and costs \$599. A nonresidential version is available for free at <http://www.spicy.com>.

Harris Computer Systems Corp. in Fort Lauderdale, Fla., which is trying to extend its military work into the commercial world, has upgraded its CyberGuard Firewall to offer additional protection for file transfers, Web browsing, remote log-ins and electronic mail. It now also offers options for high availability, high throughput, encryption and smart-card support.

Net Corp. in San Jose, Calif., announced Secure-A-File, a Windows-based, \$29-per-user product that uses public-key cryptography for E-mail privacy. Meanwhile, SecureWare, Inc. in Atlanta announced a similar product called Secure-Mail. For a test-drive, head to <http://www.secureware.com>.



Management aids for tenders of the Web are appearing nearly as fast as new Web sites. WI-COM in Palo Alto, Calif., unveiled Web "visitor tracking" software, which it said will help administrators understand where their sites are being used. For more on this, head to <http://www.wi.com>.

NavisSoft, Inc. (<http://www.navisoft.com>) in Vienna, Va., rolled out NavisTeller, a suite of software and services to help companies establish and maintain commercial Web sites. And Electronic Data Systems Corp. said it would bundle its consulting services with hardware and software from Silicon Graphics, Inc., into a package to help companies establish a commercial presence on the Web.

Would you had the instant message feature offered by some of the commercial on-line services? Now you can get something similar for the Internet for \$25 a year. Bocas Raton, Fla.-based Streetwise Systems' on.them! allows registered users — if both are logged on to the Internet — to find each other instantly and then establishes a real-time, two-way E-mail conversation. Give it a try at <http://www.personalnet.com>.

Tex Technologies, Inc. in El Dorado Hills, Calif., has announced PhotoLine for the Web. Anytime with a Touch-Tone telephone and fax machine — and with or without Internet access — can retrieve documents by fax on the Web. The product, which resides on a Web server, will ship this month for \$995.

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8:35 AM

Tiptoe down hallway to investigate.

8:37 AM

It's the printer trying to speak.

8:38 AM

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9:36 AM

They arrive to translate. Printer's saying,
"Clean my print head."

10:29 AM

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Large Systems

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AS/400 gains as warehousing option

IBM seeks support from third-party tool vendors

By Craig Stedman

IBM's attempt to turn the AS/400 into a viable data warehousing system is starting to take hold with some early adopters who are putting warehouses alongside their production AS/400s. New AS/400 server models and an integrated database within the OS/400 operating system provide IBM's installed base with a straightforward and affordable path into data warehousing, according

to some who have implemented AS/400-based decision-support systems or are doing so now.

"We can just leverage our existing staff assets and data," said Rich Kolbe, director of MIS at Harley-Davidson, Inc. in Milwaukee. During the fourth quarter, the motorcycle manufacturer plans to pilot a data warehouse built on an AS/400 server, he said.

Data warehousing defined

Data warehousing is one of the fastest-growing client/server applications. It is a pool of historical information used for business analysis and decision support.

IBM's server models are specially packaged systems that cost as little as

one-fourth the price of a full AS/400. Before the servers became available last year, warehousing on the AS/400 "was possible but less optimal," Kolbe said. "It seems they have a machine now that's dialed in a little bit more" to the warehouse concept, he said.

The servers are optimized for client/server users rather than traditional host-based terminal applications. To get the AS/400 in shape for warehousing, IBM also modernized its DB2 for OS/400 database earlier this year and announced a parallel version that will let data be shared among multiple processors.

IBM eventually wants the AS/400 to compete head-on with Unix systems and databases for warehousing business. But it has kept fairly mum while it tries to capture the support of third-party tool vendors.

Van Symons, client/server marketing executive for the AS/400, said he hopes to have an initial set of third-party commitments signed in time for an October announcement that will formally kick off the AS/400's warehousing strategy. He said IBM is working with third-party vendors, such as Information Builders, Inc., TechGnosis, Inc. and Arcor Software, Inc.

Parallel lines

IBM's data warehousing announcement in October won't include much new technology, said Van Symons, client/server marketing executive for the AS/400. But IBM will still ship the standard software for a parallel version of DB2 for OS/400 database. That is expected to become available on older AS/400s in November and on IBM's new RISC models in mid-1995.

Libers and analysts listed the following pros and cons to doing data warehousing on the AS/400:

Pros

- AS/400 server models provide strong performance
- Recent upgrades make DB2 for OS/400 a strong relational database
- The AS/400's ease of use reduces setup and support complexities
- Installed base customers can minimize retraining and changes in operations

Cons

- New high-end RISC servers won't ship in volume for another six months or more
- Choice of databases is limited to DB2 for OS/400
- Third-party warehousing tools aren't widely supported on the AS/400
- IBM's ability to reach beyond the AS/400 base is uncertain

Tools wanted

Warehousing tools "are still lacking" on the AS/400, said Lori Pupatelli, MIS manager at Chase Pfitkin Home and Garden, a home improvement retailer based in Rochester, N.Y.

Other than end-user access software that comes from outside, Chase Pfitkin is relying on homegrown tools for an AS/400-based warehouse it installed five months ago, she said.

The ease of implementation and IBM's server pricing "made it real easy for us to make the decision" to stick with the AS/400 for warehousing point-of-sale data, Pupatelli said.

DaySpring Greeting Cards, an AS/400 customer in Siloam Springs, Ark., initially

implemented its entire history warehouse on a PC server. But performance and manageability "were just dying" after the amount of data in the warehouse topped the 100-byte mark, said systems engineer Larry Overstreet.

When DaySpring switched to an AS/400 server two months ago, the time needed to move data into the warehouse each night dropped from four hours to 40 minutes, Overstreet said.

The AS/400 was about 30% more expensive than the PC server and its software, but integration and support costs are much lower, he added. "Based on what I'm seeing, the AS/400 will easily cost us less money over time," Overstreet said.

Suburban Propane links R/3 to supplier sites

By Julia King

Enterprise-wide system and data integration are the goals at Suburban Propane Co. in 1993, when the company first invested in SAP's R/3 client/server software.

Now, the Wharry, N.J.-based energy firm is reaching beyond those goals. It is using a combination of SAP-related imaging technology and custom-built interfaces to streamline report writing and link its own R/3 system and the information systems of outside suppliers.



which runs on Unix servers, was designed to work exclusively with SAP's R/3 software.

Among other things, box imaging viewer is embedded in R/3's graphical user interface.

The box system at Suburban runs on a Hewlett-Packard Co. Unix server. This is linked to R/3 financial modules from which profit and loss statements, general ledger reports and other data can be downloaded, then imaged and archived on optical CD-ROM. Suburban has installed a 400-byte CD-ROM jukebox for this purpose.

Warning system

The idea is to produce an image of the reports on CD-ROM, then — through a normal Windows-based SAP connection — let users search them and selec-

tively print what they want," said Steve Wells, director of information services at Suburban.

To help negotiate often large and complex R/3 databases, a flagging feature was built in to the box software. This alerts users when a document has been transferred from an R/3 database to optical disc, said Bruce Jackson, vice president of sales at Suburban.

Wells said Suburban's goal now is to decrease paper and microfiche records. Eventually, the company wants to eliminate these entirely.

But because the system is so new — Suburban is just now rolling out the box system at its

New Jersey headquarters — the company has yet to calculate its return on investment with the system. The plan, however, is to extend the imaging/archiving capability to Suburban's 400 sites nationwide.

Bye-bye bats

Suburban Propane went live with SAP's R/3 software in July, after a six-month implementation period. The system supports 200 users.

ADE, Inc., Suburban's outside payroll services provider.

"The version of R/3 that we have does not calculate payroll taxes or print wage statements, but it does time collection," Wells explained.

"So what we're developing with SAP is the ability to feed payroll information from SAP to ADE. ADE would then calculate taxes, produce checks and deliver them back to us," Wells said.

Best of all, Wells said, is that SAP has provided the consultants who are working on the interface project free of charge.

This is not unusual, said Clare Gillian, an analyst at International Data Corp. in Framingham, Mass.

"One of the more difficult things about being a global provider is dealing with the different regulatory requirements in different locations.

"It is very common for vendors to build a link to another application or to build an application for one client, then distribute it to other clients," Gillian explained.

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David Aaker, author of *Managing Brand Equity*, to name a few. The agenda also includes senior executives from top industry companies, such as Hewlett-Packard, IBM, Microsoft, Compaq Computer Corporation, Wired Magazine, Xerox Corporation, Ziff-Davis Publishing, CMP Publications and International Data Group.

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Union banks on LAN-based service

By Thomas Hoffman

One-stop telephone service for retail customers is one of the hottest trends in the banking industry these days.

The Chase Manhattan Bank NA, for example, recently introduced its ChaseDirect program. Consumers who use this 24-hour call-in center can transfer funds, apply for car loans or inquire about interest rates on home mortgages — all with a single customer service representative.

But centralized telephone service centers haven't been an option for most commercial banking customers, according to Michael Schenck, a technology analyst at The Tower Group, a Wellesley, Mass.-based banking and technology consultancy.

Quick answers

One notable exception is Union Bank in San Francisco, which last year introduced one of the banking industry's first commercial customer call centers. Since then, clients have found they get faster response to questions

about multiple products and services, such as wire and fund transfers. And they can get the information from one representative rather than being bounced around among specialists.

Union Bank's mainframe-based system has delivered improved customer service and hefty cost savings. It helped the bank field 1 million commercial calls last year. Nevertheless, the bank plans to

upgrade to a LAN-based scheme later this month to further streamline service agents' access to customer data.

"We have to ensure that our customers have the information they need at their fingertips. That's what they really want," said Richard C. Hartack, vice chairman of the bank, which has \$16 billion in assets.

"In the branch environment, our corporate customers would have to call different [product specialists] for different transactions," said Linda Betzer, senior vice president of the commercial customer service division at Union Bank, which is California's fourth-largest bank. "We determined

[through market research and surveys] that our clients preferred to deal with one knowledgeable agent," she added.

Early last year, Union Bank introduced a PC-to-mainframe-based call center where the bank's 25,000 commercial customers could dial specific 800 numbers that lead them to customer service representatives. These representatives are knowledgeable about their customer's vertical industry, whether it is energy, real estate or entertainment.

Big savings

By consolidating its Commercial Customer Service Group into three telecenters, Union Bank reduced its staff and saved \$1.5 million after the system's first year of use, according to Betzer. She declined to disclose how many positions were dispensed or how much the technology budget was for the project.

The bank's 75 customer service representatives have been using IBM's ValuePoint PCs for IBM 3270-type access to an MVS mainframe system that holds customer account information. The PCs are linked over three Novell, Inc. NetWare 3.12 LANs. They access the mainframe data through NetWare for SAA gateway software, said Jeremy Long, a vice president in the technology and management

information systems division for Union Bank's commercial financial services group in Monterey Park, Calif.

Later this month, the bank will replace mainframe-based connectivity with LAN-based customer account databases running Lotus Development Corp.'s Approach for Windows 3.0 relational database software.

The LAN-based

databases are

expected to

give customer

representatives

quicker access to customer

information and

provide a faster,

more detailed customer profile, according to Long.

Middlemeas

Union Bank is recognized as a leading provider of commercial services to mid-market customers in California, according to Norman Jaffe, director of business development for Pit Kelton, Inc., in New York.

For example, the bank's customer agents currently launch queries against the mainframe environment to extract data from specific customer accounts. The Approach system will provide customer service representatives with an immediate overview of a customer's entire relationship with the bank.



Union Bank's Richard C. Hartack: *Give the customers what they want*

ists for different transactions," said Linda Betzer, senior vice president of the commercial customer service division at Union Bank, which is California's fourth-largest bank. "We determined

Briefs

Bank chooses IBM

Chemical Banking Corp. has selected IBM image systems as part of its effort to re-engineer the bank's check processing operations. Chemical has purchased IBM's ImagePlus High Performance Transaction System and plans to upgrade its IBM 3800 check processors under a five-year, \$50 million project.

Manufacturers, SAP AG team up

Manufacturers Group, Inc. will link its supply chain management software to SAP AG's upcoming Release 3.0 R/3 client/server system under a recently announced joint development agreement. The interface between the companies' software is based on SAP's Application Link Enabling standard for application-to-application interoperability. It will be presented at the SAP user conference in Phoenix this month.

IBM scales down processor

IBM has introduced a desk-side version of its RS/6000 SP parallel processor. The company also will detail a large-scale decision-support product tied to the parallel processor, known as the RPD before a recent merger of that division and IBM's RS/6000 unit.

Platinum ships tool

Platinum Technology, Inc. shipped a version of its DBVision database performance management and monitoring tool that supports Sybase, Inc.'s Systems 10 databases. Platinum said it plans to add a DBVision agent for Informix Software, Inc.'s databases. DBVision, which collects database performance statistics, already supports Oracle Corp. products. Pricing starts at \$8,000 for each DBVision component plus \$6,000 for a required UniVision management console.

Massive switch for Siemens plant

Company ditches HP for Pyramid systems, SAP application

By Michael Goldberg

#One manufacturer has decided to build a massive operation. Massively parallel, that is.

Siemens Stromberg Carlson, a subsidiary of the German firm Siemens AG, has chosen three Pyramid Technology Corp. Reliant RM/1000 systems and SAP America, Inc.'s R/3 application to run its manufacturing plant in Lake Mary, Fla. Siemens Stromberg Carlson makes high-powered telecommunications switching systems.

Jim Feitz, the plant's data center manager, said his 3,200-worker company is a longtime user of Hewlett-Packard Co. HP 3000 servers. The company chose to move to another platform because the 3000's proprietary MPE operating system won't support SAP software.

Growing pains

Feitz said Siemens Stromberg Carlson was due to outgrow its manufacturing application in a year or two. He said the company wanted an SAP suite to integrate its factory operations with sales

order management and other business functions.

SAP's application, combined with some of Siemens Stromberg Carlson's own code, will replace an in-house manufacturing pack-

aging system. Stromberg Carlson didn't receive a price break.

"The Pyramid was a better platform, in our case," Feitz said. He cited its massively parallel processing (MPP) architecture as being "significantly faster" than symmetrical multiprocessing models offered by IBM, Digital Equipment Corp., Sun Microsystems, Inc. and HP.

Pyramid uses the R4400 chip from Mips Technologies, Inc., which Feitz said gave it a performance edge.

Take notice

Analysts said Pyramid hardware may deserve more notice than it gets in the market for running SAP applications.

"Pyramid has an Oracle MPP implementation. Its ability to implement large databases is clearly a differentiator [for it]," said Bob Sakakuni, an analyst at Aberdeen Group, Inc. in Boston.

Pyramid, in fact, is getting some attention. Since the RM/1000's introduction earlier this year, more than 12 firms have chosen it to support SAP R/3, said S. Boyd Pearce, Pyramid vice president of marketing. Each deal is worth approximately \$1 million, Pearce said.

Wall Data, Inc. has introduced Rumba 3.0, connectivity software for IBM's AS/400.

According to the Kirkland, Wash., company, Rumba 3.0 is a Windows connectivity product that offers full Windows support for all PC support functions, file transfer capabilities and TCP/IP connec-

tivity. It features an interface that has a configurable tool bar with tool tips, user menu setup, a help manager, three-dimensional hot spots, custom colors and the ability to integrate host documents into LAN-based mail systems. It supports batch file transfer and lets users move multiple files between PCs and IBM AS/400s at pre-scheduled times and times.

Rumba 3.0 includes Wall Data's Quick-Assist feature. Quick-Assist eliminates

repetitive keystrokes by anticipating and entering information in user-entry screens based on previous actions. Rumba 3.0 includes a 32-bit TCP/IP stack.

The product costs \$250.
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 (206) 874-9255

Storage Technology Corp. has introduced Expert Performance Reporter, a companion product for its Nearline family of automated tape libraries.

According to the Louisville, Colo., company, Expert Performance Reporter was designed to automatically produce as many as 40 performance reports that previously had to be compiled manually. These reports help users cover trends and peak period usage, set service- and performance-level objectives and develop performance management plans to maximize Nearline libraries. The reports can be viewed through a PC Windows graphical user interface (GUI) or as hard copy reports from a PC or mainframe.

Expert Performance Reporter includes a GUI that lets users cut and paste reports into management documents.

Demonstration software for Expert Performance Reporter can be downloaded from the World Wide Web at: <http://www.storage.com>.

Pricing for a basic license starts at \$4,800.
 ▶ **StorageTek**
 (303) 673-5699

BMC Software, Inc. has unveiled Paclog, a high-speed utility for backup and recovery of corporate data.

According to the Houston company, Paclog combines BMC Software's Extended Compression Architecture technology and a log filtering process to reduce the size of IBM DB2 archive logs by up to 95%. This reduction lets customers recover DB2 data quickly and easily, improve disaster recovery planning and save on storage media.

Paclog ships with a modeling tool that analyzes users' current DB2 logging environments and evaluates alternative logging choices.

It also can calculate the optimal size and number of active logs. Paclog can create up to four copies of the archive log, two more than DB2 allows.

Pricing for Paclog starts at \$8,600.
 ▶ **BMC Software**
 (713) 918-8300

StarWare, Inc. has introduced StarSQL for Windows 95, a 32-bit PC-to-host data access product for Microsoft Corp.'s Windows 95.

According to the Berkeley, Calif., company, StarSQL for Windows 95 is an extension of StarSQL for Microsoft's Windows NT that provides full native support for Windows 95.

The product is a software driver that lets any Open Database Connectivity-enabled, Windows-based program access data directly from IBM midrange, mainframe and Unix systems. It includes support for multithreading and the Windows 95 user interface.

StarSQL lets users bring record-by-record information from IBM DB2 databases into Windows-based applications without having to leave an application. It also lets programmers develop transparent client/server applications for DB2 data access.

StarSQL for Windows 95 costs \$150 for a single-user system. Pricing for a multi-user system starts at \$950 for a 10-copy license.

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Information Builders

Application Development

CASE • LANGUAGES • TOOLS

Software AG comes out swinging with low-price database

By Stewart Deck

Like an amateur boxer trying to establish himself as a prizefighter, Software AG of North America, Inc. has issued a noisy challenge to database heavyweights such as Oracle Corp. and Sybase, Inc.

Relational database management systems

Software AG has introduced Adabas D 6.1, a multi-user relational database, at the rock-bottom price of \$6,500 for a 10-user system. This is approximately half

of the per-user price for Oracle and Sybase databases. Analysts said this effort to undercut Oracle, Sybase, Informix Software, Inc. and other contenders in the relational database management systems market was necessary.

"Any company wanting to enter the fray now better have an aggressive plan – they have to make their product very attractive from a price and usage view because this kind of [market entry] can be quite costly," said Rich Finkenstein, an analyst at Performance Consulting, Inc. in Chicago.

Software AG, page 84

Permit for Adabas D is \$6,500 per server, with the following client pricing:



Tool pair smooths switch to client/server

By Elizabeth Heichler

Developers moving host applications into the client/server world might get some help from two tools that automatically generate client-side code.

Software Development Tools, Inc. (SDTI) in Cambridge, Mass., is releasing AppBridge AutoCode and AppBridge Express.

AppBridge AutoCode runs in Microsoft Corp.'s Visual Basic or Powersoft Corp.'s PowerBuilder. The pack-age builds Windows versions of host screens and recreates host navigation logic, but it does so in the language used by the two client/server application development tools.

From within the AppBridge AutoCode

environment, developers navigate through the host system in a terminal emulation session, and the tool records the navigation logic and generates Visual Basic and PowerBuilder equivalents. The tool also allows developers to combine multiple host screens into a single graphical user interface screen and re-engineer the client side of the application without changing the host side, said Donald Daly, president and chief executive officer of SDTI.

AppBridge Express automatically creates GUI screens for IBM mainframe and AS/400 applications with no manual intervention required. This means developers have a fast way to put Windows front ends on host-based

applications and can use AppBridge Express as a first step in client/server migration, Daly said. The software automatically interprets host screens and generates menus, buttons, panels, and field areas. Changes to Windows screens are made dynamically as the related host screens change, so no maintenance is needed.

"The real benefit of Express is that we don't have to make coding changes. It takes the AS/400 screen and translates it to a GUI," said Bruce Raleigh, an advanced systems analyst in Salt Lake City. Raleigh said he is evaluating Express because it could be useful for quickly putting GUI front ends on AS/400-based host-based applications.

The only other alternative is to re-

FROM SOAP TO MULTIMEDIA

Interactive multimedia isn't the only new trend Procter & Gamble has blazed in advertising over the years

1857 Procter & Gamble founded

1879 Ivory soap campaign first to advertise directly to consumers

1932 The Puffin Book is the first sponsorship of daytime radio dramas – later called soap operas

1950s Sponsors TV soap operas

1995 Alan Brady of ClevTech predicts on-line soap operas could be the next hot media because they will be easy to track and provide more marketing data

Line products (see chart)

Although on-line and interactive services are developing areas for advertising, Procter & Gamble already has a multimedia experience.

"They have been using multimedia internally," said Ken Christie, a representative at the Interactive Multimedia Association in Annapolis, Md. "With the explosion in on-line services, this is certainly a viable marketing, advertising, and communications area."

Procter & Gamble also has a contract with Paramount Television to develop network and first-run syndicated television shows to help it get into the interactive arena.



Developers can use AppBridge Express as a first step in client/server migration.

New from Software Development Tools		
Product	Availability	Price
AppBridge AutoCode for Visual Basic	Now	\$1,995 (developer's license)
AppBridge AutoCode for PowerBuilder	Later this month	\$1,995 (developer's license)
AppBridge Express	Now	\$2,500 (one-user license)

write applications for client/server environments," Raleigh said. He added, however, that he views Express as an interim solution in the move to client/server technology, which will ultimately involve re-organizing the application's structure.

Al Pfleider, Inc., a pharmaceutical company in New York, Express is also under the microscope.

Mike Neibert, manager of manufacturing systems at Pfleider, said Express is impressive because no time is spent converting screens from host to Windows.



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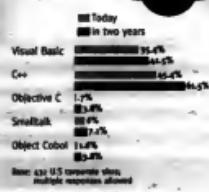
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What application development languages do you use at your site today?
In two years?

Data View



Source: 420 U.S. corporate sites; multiple responses allowed

Source: Strategic Vision, Worcester, Mass.

IBM's VisualGen hits record speed

By Amy Malloy

IBM has beefed up its VisualGen development tool, claiming that applications created with the new version will run up to 10 times faster than those developed with the old version.

VisualGen 2.0 combines visual programming and an IBM fourth-generation language (4GL). The 4GL, which has a graphical tool, makes the combination of logic and graphic elements possible during programming, explained Judith Burwitz, president of Burwitz Consulting Group, Inc. in Newton, Mass.

Built into VisualGen 2.0 are two IBM products that boost developer speed. These include the visual construction environment from VisualAge 2.0 and TeamConnection for OS/2, which makes collaboration on software development easier.

Other new features include the following:

- Support for file access and scrolled windows through new graphical user interface components.
- An improved integrated test environment that allows early testing of applications.
- Tools oriented to developing multimedia applications.

Analysts said IBM shows good foresight by including these features. "In some ways, it's heartening that IBM has such a clear vision regarding where the application development marketplace is going to be looking for when they start turning away from mainframes," says Evan Quinn, an analyst at International Data Corp. in Framingham, Mass.

IBM's decision to include a 4GL in VisualGen makes it more competitive in the marketplace, analysts said. For instance, it brings the company up to par with Radsoft International, Inc., which offers a product that combines a 4GL with a visual programming tool.

Quinn said he expects 4GLs to see annual growth of 14% for the rest of the decade.

Multimediacode

VisualGen is an integrated visual programming development environment that can generate code for C++ and Cobol applications that will run in a wide variety of environments, including OS/2, AIX, Windows, OS/400, MVS and VMEBA.

Workflow management

UES, Inc. is coming out of its shell and moving work management out over the Internet. The small Dublin, Ohio-based firm has announced Track-IT, a low-end companion to its KI-Shell work management and development package. KI-Shell lets users access workflow tasks on the Internet via a World Wide Web browser.

UES President Jay Ramanathan dubbed Track-IT "KI-Shell lite."

KI-Shell provides object-oriented work management support for high-volume settings. While developers can use KI-Shell to create low-end, administrative workflow applications, analysts said it is too complicated for typical low-end environments.

Track-IT provides low-volume, administrative workflow management (see chart). Remote users can connect to a company's workflow process serv-

er with the help of a Web browser, then review and pick up workflow items in the Internet's Hypertext Markup Language format.

Developers, meanwhile, can create workflow applications, such as supplier paper-work management or software development, changes, for both on-site and remote users without additional programming.

Interactive support

Workflow software automates and tracks the movement of work items through an enterprise. Ramanathan said KI-Shell and Track-IT specifically provide work management by adding interactive decision support that addresses what the work item does between users' in-bounds.

Allison Engine Co. in Indianapolis used KI-Shell to develop collaboration applications for designing compressor blades as well as for tracking product

Web working
UES' Track-IT software gives remote users a reason to surf the Internet. With a Web browser, users can

- Collaborate on documents
- Prioritize tasks and minimize management
- Track tasks and project expenses
- View task assignments for a project

create workflow applications. One area that has been considered is document management, which she said was a natural fit.

Ultimus in Raleigh, N.C., also has plans for workflow over the Internet by early next year.

Track-IT is a commercial outcome of the National Industrial Information Infrastructure Protocol, a government project to help companies create "virtual enterprises" across the Internet.

Track-IT will be available on Unix platforms, Windows and OS/2 for \$900 per runtime user by year's end.

Briefs

Tandem to merge database

Oakland, Calif.-based Tandem International Technologies, Inc. plans to port its mainframe object-oriented database to run on multiprocessors from Tandem Computers, Inc. in Cupertino, Calif. The plan also includes porting the Illustris and Tandem Netfront SQL databases "over time." Their goal is to allow on-line transaction processing and large data warehousing applications to run on the same server.

Client adds SQL tools

Tun Plus 8.0, the latest version of a popular client/server relational PC-to-Unix database management software, debuts in late week in the U.S. Esther OLS, in San Francisco, wants to smooth client/server integration with its new software, which includes middleware components designed to support RDBI requests with Unix database management interfaces from Sun, Oracle Corp. and Sybase, Inc. Tun Plus 8.0 costs \$895 per user and includes TCP/IP, terminal emulation, database, electronic-mail/fix modules and Netcage Communications Corp.'s Navigation.

Old apps, new Web tricks

Open Software Associates, Inc. has created a set of developer tools for building World Wide Web applications, according to officials at the Nashua, N.H., firm. The Open Web tool set was designed to let Cobol, C or C++ applications become Internet-accessible via Open Software's Open/UX graphical user interface. An early version of Open/UX, without user-interface control features, is slated to ship before the end of the year; a full-function edition is due out in the first quarter of next year.

Japan won't block software

In an agreement with the American National Standards Institute, Japan has dropped its planned software standard for non-Japanese software. U.S. industry groups claimed the standard would have created a trade barrier to the Japanese market, raised development costs and allowed Japanese software to stifle production sites, endangering trade secrets.

ObjectSpace tool shares

ObjectSpace, Inc. in Dallas has released ObjectCatalog, a cross-platform tool that lets different development teams share information about software, design patterns, trans-

works and documents. It lets users define search patterns for finding target entries in local and remote catalogs. ObjectCatalog runs on Microsoft Corp.'s Windows, Windows 95 and Windows NT, IBM's OS/2 and AIX, Hewlett-Packard Co.'s HP-UX and Sun Microsystems, Inc.'s Solaris and SunOS. The current version costs \$495. The server costs \$8,500.

Thomson develops for Ada

Thomson Software Products in San Diego has introduced ClearCase for Ada, a configuration management tool for Ada development environments. By integrating Ada with Afrix Software, Inc.'s ClearCase, Ada developers can version control, build management and process-control capabilities. ClearCase for Ada costs \$4,000 for a single-user license.

Softel unveils tab tool

Softel vols in White Plains, N.J., has announced SoftTab 2.0, a configuration control tool for Windows developers. It has a tab design application that lets developers generate a tab control look or generate C or C++ runtime source code to create the control look. Pricing is \$295 for a single developer license without Dynamic Link Library (DLL) source code and \$475 with the DLL source code.

Five way

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Dr. James H. Goodnight
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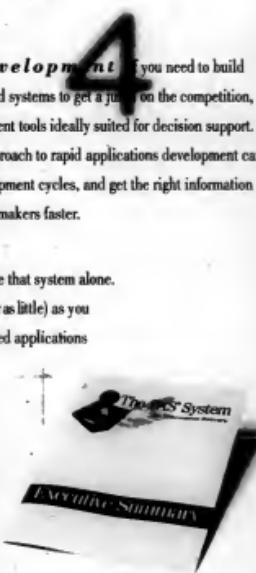
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Microsoft-Ocrion, Inc. has announced Recore 4.0 for Windows 95, an optical character recognition (OCR) development tool kit.

According to the Fremont, Calif., company, Recore 4.0 for Microsoft Corp.'s Windows 95 is a 32-bit tool kit that gives developers a set of integrated C func-

tions and tools for creating native Windows 95 OCR applications.

The tool kit includes a function library with a high-level programming interface that controls and manages the recognition process. Additional features include recognition operation, session control and image and file registration. These tools were designed for developers creating Windows 95 OCR applications, including document imaging systems, fax applications and bar-code recognition.

Recore 4.0 for Windows 95 costs \$3,095.

► **Microsoft-Ocrion**
(510) 252-0200

Popkin Software & Systems, Inc. has announced System Architect/Delphi Link.

The New York company said System Architect/Delphi Link is a Windows-based interface between Popkin's rule-based modeling tool, System Archi-

tect, and Borland International, Inc.'s Delphi development tool. System Architect/Delphi Link lets developers import and export design information, including data elements, tables, extended attributes and Delphi forms. It supports the generation of skeleton files. Future releases will include program logic.

System Architect operates on Microsoft Corp.'s Windows and Windows NT and IBM's OS/2 2.1 and Warp platforms. Pricing for option modules for System Architect/Delphi Link starts at \$495.

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Software AG

CONTINUED FROM PAGE 79

Pinkstein said Software AG has a chance to draw customers despite its late entry into the market. "They're offering an easy-to-use database at a very cheap price, and they have a big, happy customer base that they can draw on," he said.

Software AG, long a mainframe vendor, has offered a client/server RDBMS in Europe for three years. But this is its first attempt to move away from its mainframe-based products in the U.S. market. Software AG wants to keep existing mainframe customers as they move to client/server environments.

Out on top

Several users praised the client/server RDBMS despite initial doubts.

"We were skeptical at first because Adabas wasn't known in the U.S., and we didn't have anyone trained on it," said G. H. "Rocky" Haddix, controller and chief financial officer at Emco-Maier Corp. in Columbus, Ohio. Emco-Maier is owned by a European company that decided to standardize on Adabas D6.1.

Haddix said he has been pleasantly surprised by the product. "We got it up and running, and now it just sits there in the background purring right along," he said.

Another early skeptic, John Mure, database administrator at the University of Windsor in Ontario, also changed his mind.

"I was worried about [its] stability at first because I knew that Adabas C [another Software AG product] had some deficiencies. But Adabas D turned out to be very stable," he said. While he thinks Adabas D lacks maturity compared with Oracle or Sybase and isn't as rich in features or as polished, "it is a lot less expensive and has the main features you need," Mure said.

Despite these early positive returns for its product, Software AG has two key issues to address: proving product quality and bringing existing mainframe customers over to client/server technology.

Pinkstein said many Software AG customers don't want to go to another company for relational systems. He predicted that many customers "will give a big sigh of relief now that they have a [Software AG] product choice."



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Your Next EXCELLENT? Adventure

70%

of all Fortune 1,000 companies have implemented centers of excellence in some form.

Source: Metia Group's Advanced Information Management Strategic Group, Stamford, Conn.

70%

of all IS organizations at medium-size to large companies will implement centers of excellence by 2000.

Source: Gartner Group's Management of Information Technology Group, Stamford, Conn.

70%

of companies implementing centers of excellence are having trouble.

Source: 1994 Metia Group Survey of IS clients

IN the next five years, most companies will stick IS specialists in **CENTERS OF EXCELLENCE**. Not everyone will find them quite so excellent.

By
Rochelle Garner

Connie Deletis isn't just mandating change at National Semiconductor Corp.'s information systems organization: he's inflicting transformation on a massive scale. Six months into the initiation process, Deletis has stripped out layers of management, forced employees to reskill for their jobs and realigned staff into teams. But not just any teams. He's instituting those teams as "centers of excellence."

The concept goes by many monikers—compency center, shared resource center, high-performance environment. Whatever the name, these centers organize people by their technical expertise and have a common focus.

But just how excellent these centers are depends on a constant commitment to training. In this radically redefined organization, top technical skills for employees and soft skills for supervisors are absolutely critical for success.

And be warned: "Most corporations will be unable to carry this off because of the natural parochialism," says Deletis.

Adventure, page 28



National Semiconductor's Connie Deletis: New emphasis on behavior, attitudes



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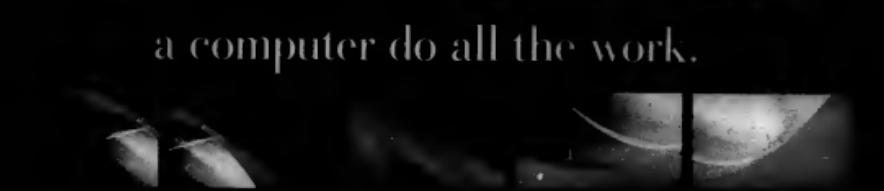
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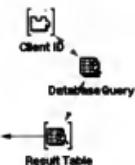
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CONTINUED FROM PAGE 98

iam in an organization," says Joseph Cleveland, who, as president of enterprise IS at Lockheed Martin Corp. in Orlando, Fla., has embarked with his company on the troubling centers of excellence waters. "Managers have to give up responsibility for something that's vital to them."

Beyond that, centers of excellence are as varied in how they manage people and projects as the organizations that implement them. That's because companies are making this up as they go along. So why the attraction to this model?

"Centers can sometimes be the only way to manage a flat organization," says Tom Shipley, vice president of Gartner Group, Inc.'s Management of Information Technology Group in Austin, Texas. "They also let you deliver skills and resources to a project just in time, leverage economies of scale and propagate an architecture throughout the enterprise."

According to Gartner Group and Meta Group, Inc., businesses are increasingly like the sound of those benefits. Still, it must be noted loudly and up front that centers of excellence are not for everyone.

The experts, experts say, is that for centers of excellence to work, organizations must assume economic and cultural burdens that they may be ill-equipped to handle.

The economic burden occurs because companies must swim against two tides: the downscaling that eliminates everyone except those skilled in core competencies and the tendency to slash training when budgets are tight. In place of cost-cutting, companies must invest in technical training for all staff.

The cultural burden occurs because centers of excellence serve to flatten hierarchy, fundamentally alter the roles of managers and reshape the dynamics of the organization.

"People work within an area or a team that they own, so there's a sense of belonging," Shipley says. "But with competency centers, people can work for many bosses, many areas and many projects — and that can destroy their sense of community."

Common ground

There's a reason these centers can skewer people's notion of community — their function as resource pools.

"I look to the [centers of excellence] to be pools where people work to become the best at their skills and to share their expertise with others in their centers," says Charles Clark, vice president of IS at Bell Atlantic Co.'s Large Business and Information Services division in Arlington, Va. "No work is performed in those centers, but in project teams that form temporarily and then disband."

This can be unsettling to everyone, but especially to mid-tier managers, says chief information officers and management experts. And for good reason: Their jobs disappear.

"We want to break down barriers to fast and effective decision-making," Detert says. "Managers tend to put up barriers of one sort or another. That is why National Semiconductor's IS department is being equated flat: the sum is to have only two management levels, holding middle managers back from the technical ranks as analysts, project leaders and business partners. It's a pattern being played out at many companies. At Bell Atlantic, Texas Instruments, Inc.

Centers of Excellence

and Lockheed Martin, for example, middle management jobs have disappeared outright.

"We are dealing with the old paradigm that said success is moving up the organizational chart," says Dan Murphree, director of information technology strategy, processes and resources at TI in Plano, Texas. "But you find when you talk through these changes that many of these managers didn't like what they were doing anyway, that they are happier as project managers, business managers or senior technical pros."

Those people who end up supervising human endeavors will be chosen for their soft skills — the abilities to listen, communicate and guide.

Technical track

One thing, above all, stands out in the new organization: Technical skills become the currency of success. "This is a structure oriented around rapidly forming project teams, and that means we have to develop the skills we need throughout the company," says Murphree, architect of what many consider the premier center of excellence model in the country.

Training at TI is a yearly requirement, with IS staff receiving an average of two weeks of instruction per year. "There are some folks in rapidly changing technology areas who get four to six weeks of training," Murphree says.

This commitment to training, in fact, is a hallmark at every center of excellence-structured IS department. It has to be if those resource pools are to quickly deploy new technologies for quicker business requirements. But it also provides an unexpected bonus: A long-term career track with new courses and training geared to their assigned centers.

Obviously, this stuff takes work. So why put up with it? The benefits, that's why.

"Using centers of excellence allows us to propagate the same technology throughout the organization, which eases support in the long run," says Andrew Klobus, LAN/Boss chief of technology at ITT Fluid Technology Corp. in Morton Grove, Ill.

And the beauty of it all, CIOs say, is that this propagation occurs almost organically. IS staff, skilled

in a particular product or methodology, apply their brand of expertise every time they move to another project. Eventually, that one technology or architecture becomes the norm throughout the organization. No arm-pulling, no politics. ITT Fluid Technology, which actually comprises many smaller companies, may represent the propagation forces at their most dramatic. That's because center of excellence members are geographically dispersed around the country, even across subsidiaries. "The challenge was having management understand they should allow their employees to work at other units," Klobus says. "But the benefits — the stability of our LANs and our WANs — was felt almost immediately. Now everyone sees the value of [centers of excellence]."

Any others? Clark thinks so. For him, centers of excellence are the means to transform IS from an operational backwater focused solely on legacy systems to a consultancy concerned with business development.

"That focus lets us work on new technologies that can help the company. A year ago, we had no client/server development in my organization. Now, my four big projects are all client/server."

So is all of the organizational overhead worth the trouble? That remains to be seen because the implementations that do exist are still new and relatively unproven. While there are many reasons they will work, one thing is certain: Mistakes will be made. At some companies, centers of excellence will wind up as circles of hell.

INGREDIENTS FOR EXCELLENCE

WHAT'S CENTRAL TO A CENTER

Centers of excellence can focus on the following:

- Specific technical skills, such as graphical user interface or Powersoft Corp.'s PowerBuilder experts.
- Disciplines, such as application development. These centers might include C++ programmers, business analysts and project managers.
- Business processes and functions. A finance center of excellence, for example, could handle user liaison, development, networking and operations needs.

CENTERS AT TEXAS INSTRUMENTS

TI is an early adopter of the center of excellence model. The company has set up the following 17 centers:

- Administration
- Business analysis
- Business process engineering
- Business programmers/analysts and database administrators
- Communications engineers
- Customer support
- Enterprise operations
- Enterprise system planning and product process support
- Leaders
- Network operations
- Quality coordinators and facilitators
- Software process improvement
- Software quality assurance
- Systems architecture
- Systems software analysts
- Systems software programmers/technicians
- Technical writing and communicators

CENTERS IN ACTION

There are many ways to run centers. Here is the most common model:

- IS professionals skilled in a particular technology or methodology are assigned to a center.
- As projects arise, members from different centers are tapped for ad hoc project teams.
- Once a project is completed, the team disbands, and its members return to their centers.
- Between assignments, members receive training at their center.

Garner is a freelance writer in San Carlos, Calif.



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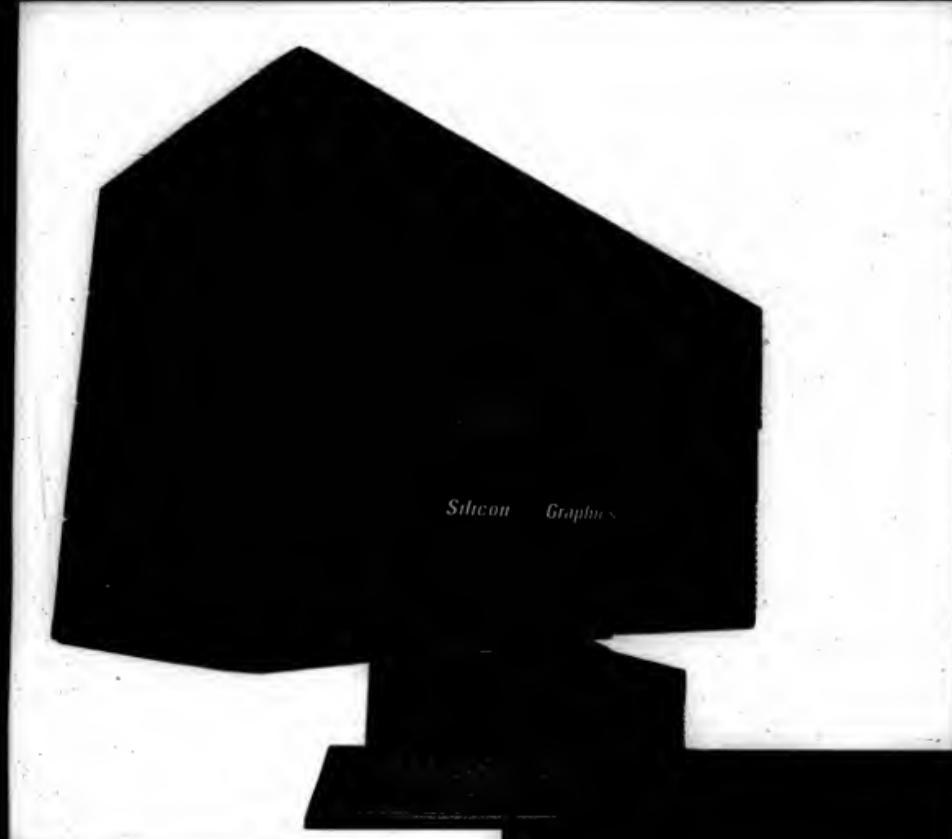
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Just-in-time training

*Just-in-time
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By Leslie Goff

What should you say if your CIO asks for an assessment of just-in-time training? Try this memo on for size.

To: Chief information officer

From: Director of information systems training

Re: Request for information on just-in-time computer-based training

Re: Sounds promising; proceed methodically

If implemented correctly, just-in-time computer-based training can be a highly effective and affordable way to train our staff. Just-in-time training would let us deliver highly focused, hands-on courses to employees just before they need them for a specific project. An example is our move to client/server technology. We could offer this multimedia training through modular training software at any site. Employees could mix and match training material to meet their own needs and pace. Employees and managers could determine what training is necessary immediately before a training project requirement and monitor the employee's progress.

This can save the company considerable time and money over the cost of long-term off-site training. IS staff will benefit from the immediacy of the courses and the great depth of information. But to get full benefits it must be easily accessible. Employees must be able to work smoothly and at their own pace.

I made several inquiries into how well just-in-time computer-based training has worked for others. My findings follow. The checklist will help you evaluate whether just-in-time training is appropriate for use at this time.

What's special about it?

The concept isn't actually new. Stewart Stokes, a senior vice president at QED Information Sciences, Inc. in Wellesley, Mass., says IS managers and others are simply rediscovering on-the-job training. What is new? We can offer just-in-time training in a self-paced, computer-based interactive format. IS staffers can improve their skills without leaving their desks.

The computer-based training can be used at the work site for just about any job position.

Who's doing it?

Computer-based just-in-time training is being used in several leading companies. American Honda and Union Pacific Corp. are using it to train IS staff and end users alike. American Honda in Torrance, Calif., plans to take some of the hands-on simulation training done in its training center and offer it to service technicians at dealerships via interactive multimedia, according to Ron Christy, an American Honda training administrator.

What is the cost?

Small companies can use good courseware on the market. With our large IS staff we should consider customizing our own. The cost: \$60,000 to \$100,000, but long-term savings will justify it. The challenge here will be maintaining and modifying it in the future.

What are the returns?

There would be several payoffs. If computer-based just-in-time training is well managed, it can cut the cost of instructor-led training in half, says Dave Dwarkota, director of multimedia and systems training at Union Pacific Railroad in St. Louis. Training costs now range from \$35 to \$250 per person per day.

Employee would also retain material better and could get more actual training time. The gain: far less off-site travel.

Another advantage, Dwarkota says, is "once you have purchased it, your staff has the ability to refresh their skills anytime throughout the year. So you get an additional cost savings."

Will they use it?

Hopefully IS staff will see this as a way to advance both their skills and career development. But its effectiveness depends on how it is presented to them. It must also be easy for them to work with.

At Union Pacific, Dwarkota says, "We're seeing reasonable demand for it, but we had to use change agents to really get people involved. You have to have a strong marketing plan from your training department. Follow up with some sort of incentive."

And Don Baumhart, chairwoman for the Union Pacific Training Consortium, a corporatewide training think tank for Union Pacific, warns, "The mechanics of it need to be perfect, and the way you navigate through the course must be flawless because IS people will be very judgmental if it isn't perfect."

Just-in-time training checklist

Timing: Can we schedule training immediately before a new project? **Content:** Will courseware be in-depth and interesting to use? **YES** **NO**

Supply: Can we provide (or afford) the necessary equipment? **Involvement:** Will it be highly interactive and respond to questions? **YES** **NO**

Demand: Will training and IS managers work together to promote it? **Accessibility:** Can employees access material easily and at their own pace? **YES** **NO**

Integration: Will it be a highly focused supplement to classroom instruction? **YES** **NO**

Goff is a freelance writer in New York.



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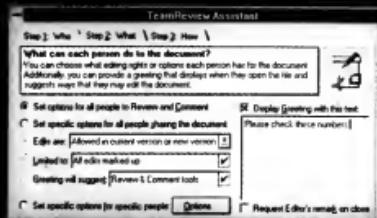
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PORTLAND...Millennia Publishing of Springfield has assigned the launch of its new ~~book~~ of teen novels "The Carlin Twins" to Sasso Skiffington Advertising, Inc., of Portland according to Sarah Davis, Millennia's VP of Marketing. The account was assigned without a review. Billings are yet to be determined.

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"The Carlin Twins" is a series of 12 novels written by famed mystery writer Jason Geddis, author of such titles as "Mystery on East Fourth Street" and "The Good, The Bad, and The O.K." Geddis, a professor of English at Saint Ann's University, was nominated for the Youth Writer's Guild Author of the Decade Award in 1990.

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Sasso Skiffington will create TV, radio and transit advertising to support the launch. The 30 television commercials, which will kick off the launch, directed by Mike Piro of Monument Films, is being debuts at the Spectacle Show in Dallas in February. Creative credits belong to Executive Creative Director Chris Poulin, Copywriter Kate Carr and Art Director Steve Gibbons.

Sasso Skiffington Advertising, Inc., with offices in Portland and New York, was established in 1979, employs ~~25~~ people and reported billings of \$122 million in 1994.

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Calendar

SEPT. 25-OCT. 20

Multimedia Training: How to Make It Happen. San Francisco, Sept. 25-26 — Sessions will include "Build a Business Case for Multimedia Training"; "The First Steps in Adopting Multimedia Training"; "Off-the-shelf Programs: Will They

Work For You?", "Converting Your Curriculum Strategies for Success", and "Platform Considerations: Options, Benefits and Limitations." Fee: \$695. Contact: SkillTech Professional Seminars, Medford, Mass. (617) 388-7246.

Future Directions of Enterprise Resource Planning

Management

Systems, Las Vegas, Sept. 25-26 — Keynote speaker Thomas G. Gunn, author of *In the Age of the Real-Time Enterprise*. Contact: Plant Wide Research, Billerica, Mass. (508) 663-9212.

10th Annual Symposium for Human Resource Executives in Information Systems. New Orleans, Sept. 27-29 — Focus is on leading-edge human resource systems and transforming IS organizations. Topics include "Revitalizing IS Professionals to Want Reskilling," "Revising After Outsourcing" and "People Investments to Sup-

port Transformation." Contact: Robert Zamecki, Zamecki & Associates, Colorado Springs, Colo. (719) 599-0848.

MCIS '95. Toronto, Sept. 28-30 — Theme: Information systems for the future. Contact: International Association for Computer Information Systems (IACIS), SHAWNEE, Okla. (405) 744-5204.

INDUSTRIES

1995 NASIRE Annual Conference. San Antonio, Sept. 25-27 — Theme: "Meeting the Information Republic: Meeting Citizens' Needs." Fee: \$225 for government employees, \$395 for National Association of State Information Resource Executives (NASIRE) members, \$695 for corporate members, \$100 for guests. Contact: NASIRE, Lexington, Ky. (606) 231-1806.

Graph Expo. Chicago, Oct. 8-11 — Topics include CD-ROM, on-line databases and direct, digital and decentralized publishing through wide-area business networks. Contact: Graphical Arts Show Co., Roselle, Ill. (708) 264-7290.

USER GROUPS

15th Annual Eastern America AT&T/INCRUDOS Computer User Conference. Bushkill, Pa., Oct. 18-20 — Focus will be on Microsoft Corp.'s Windows NT, Unix technologies plus general computer and management subjects. Contact: Frank Whalen, TIAA/Orien Testing Machine Co., Willow Grove, Pa. (215) 675-7104, ext. 216.

TECHNOLOGIES

Network/Internet '95. Atlanta, Sept. 25-29 — Topics include network connectivity, Asynchronous Transfer Mode and switched networks, enterprise applications and practical internetwork applications. Keynote speaker: John T. Chambers, chief executive officer and president of Cisco Systems, Inc.; Sheldon J. Laube, executive vice president and chief technology officer of Novell, Inc.; Jim Althoff, senior vice president of business systems at Microsoft Corp.; and Carl Malamud, founder of the Internet Mailcasting Service. Contact: Kathleen Burke, Softlink Express, Foster City, Calif. (415) 570-0990.

The Home & Family Computing Supershow. Boston, Oct. 6-8 — Will also be held Oct. 25-27 in Atlanta, Dec. 5-10 in Dallas and Dec. 15-17 in San Francisco. The conference format will be a "Technology Theme Park." Consumers can send electronic mail to the rich and famous, explore interactive TV, surf the Internet and try out the hottest new computer games. Contact: Multimediacorp, Houston, Texas (713) 974-0232.

Calendar announcements should be submitted at least six weeks prior to the event and include the title of the event, dates, location, theme or focus, keynote or major speakers, principal topics and a contact person, organization and phone number.

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The CW Guide to Hubs and Routers

210 CW Guide



Switching hub and router vendors are scurrying to take the plunge into the ATM pool

There's no question about it: With the advent of LAN switching, traditional shared LANs are going the way of the dodo bird. With Asynchronous Transfer Mode (ATM) looming in the background and promising to deliver a quantum leap in switching performance, many users are saying good riddance to their shared LANs.

LAN switches allow network managers to separate their networks into smaller segments to boost the amount of network bandwidth available to each user. Some switches even provide users with their own dedicated bandwidth. This can be done with little or no change to existing network equipment and is fairly inexpensive — most switches cost

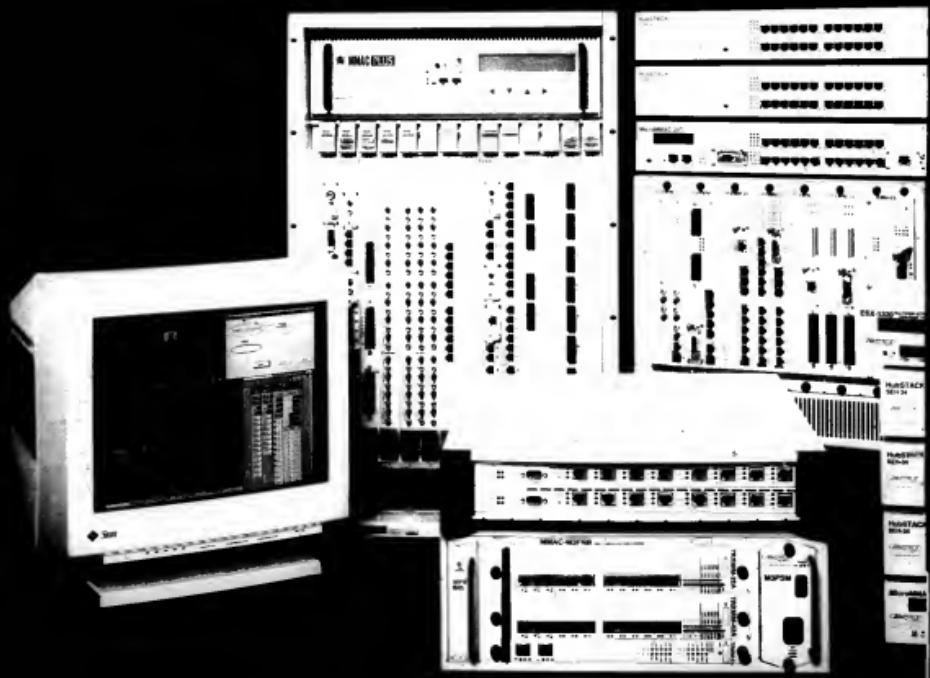
BY STEPHEN P. KLETT JR.

about \$300 per port.

Before switches, routers performed this segmentation function in addition to providing internetwork connectivity and wide-area access. However, a router's inherent level of software intelligence, complexity, architecture and price — roughly \$1,000 per port — makes it overqualified for the internetworking job that switches perform so well, industry observers say.

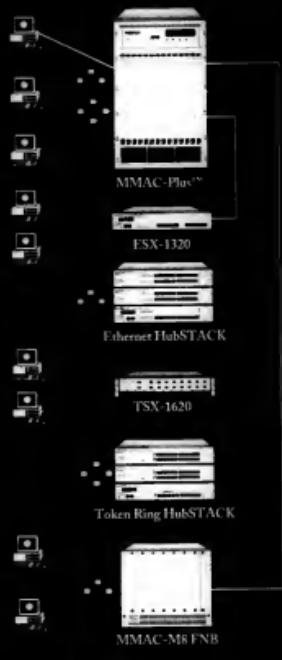
"Switching is easily understandable, easy to do and reasonably inexpensive," says David Meyer, senior network engineer at the University of Oregon in Eugene. "Switches are generally plug-and-play, while routers are the most difficult thing I can think of."

Last one in, page 108



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Hubs and Routers

Virtual circuit

Resulting pathway created between two devices communicating with each other in a packet-switching system.

Routers

Connectionless devices that send data packets to every node on a LAN segment rather than just to the packets' intended recipient. Routers can create network congestion because they have to break down and rebuild every data packet that passes through them to understand where it needs to go.

Firewalls

Routers have the ability to create firewalls by limiting users' access to areas within a campus network. Firewalls also keep each workgroup's activity isolated from the rest of the network, so if something goes wrong in a particular workgroup, only that workgroup is affected. This feature gives routers an edge over switches and ATM.

Source: Definitions were gathered from The Computer Glossary by Alan Freedman and from writers to this Guide

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CONTINUED FROM PAGE 105

As a result, the LAN switching market has enjoyed explosive growth. This fact, coupled with the growing acceptance of ATM—a switched, cell-based network transport protocol capable of carrying almost any data type at 155M bit/sec.—has led many observers to predict the demise of the traditional router.

Why? ATM will not only boost raw switching performance, but it will also bring many class-of-service capabilities that are performed by routers today.

"The ultimate victory of ATM (and switching) over routing is pretty well assured by everyone, including routing vendors," says Tom Nolle, president of CIMI Corp., a consultancy in Voorhees, N.J.

Indeed, this possibility has fueled a furious period of internetworking company acquisitions. The mergers

have dramatically changed the faces of the industry's biggest players. For example, Synoptics Communications, Inc. and Wellfleet Communications, Inc. merged to form Bay Networks, Inc. Their main goal was to create an ATM-based switching hub with integrated routing capabilities.

All aboard

Meanwhile, leading router vendor Cisco Systems, Inc. gobbled up LAN-switching vendors Kalpana, Inc. and Cascade Communications, Inc. and ATM switch maker LightStream Corp. to make sure it wasn't left off the switching bandwagon. Cisco also recently formed an ATM business unit, separate from its routing business.

3Com Corp. snatched up ATM switch vendor NicelCom, Inc. and more recently, switching hub maker Calcomp Corp. These are just a few of the bigger acquisitions. Everyone in the internetworking market is jockeying for the biggest slice of the ATM pie.

As a result, nearly every large network vendor today offers a LAN switching hub that can accommodate routing modules and provide an upgrade path to ATM.

Another strike against traditional stand-alone routers is they block networks because they break down and rebuild every data packet that passes through them. As networks become more congested with high-bandwidth client/server applications, routers are increasingly becoming network bottlenecks.

Switches, on the other hand, set up

GLOSSARY

Bandwidth

Transmission capacity of a computer channel, communications line or bus.

Open Systems Interconnection model

A standard for worldwide communications that defines a framework for implementing protocols in seven layers.

Switches

Connection-oriented devices that set up virtual connections between only those nodes that need to communicate. Switches only need to look at the first packet of data to determine its path. Thus, users are looking to substitute switches for routers in order to make more efficient use of their network bandwidth.

ATM

A switched, cell-based network transport protocol capable of carrying almost any data type at 155M bit/sec. ATM takes all types of network traffic—data, voice, video and TV signals—and cuts it into 53-byte cells or packets.

virtual connections between only those nodes that need to communicate, so they get more efficient use of their network bandwidth.

ATM a ante

ATM only ups the switching ante in terms of raw performance and scalability. Today, typical high-end routers have a raw performance of roughly 500M bit/sec. of data throughput. Most ATM switches have a raw performance of between 5G and 10G bit/sec.

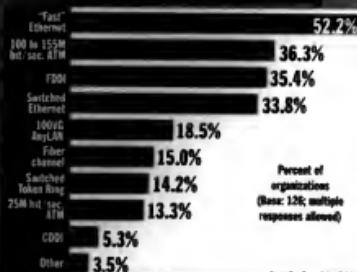
However, ATM still has a lot of growing up to do. A lack of standards currently limits the technology's experimental use to individual workgroups or as a backbone technology, analysts say. As a backbone, ATM would feed the myriad networks and subnetworks in a campus environment.

"ATM probably gets a lot more hype than it should, and it certainly won't displace routers over the next few years, as people will only be using it for vertical risers and campus backbone applications," says Kathryn Korostoff, president of Sage Research, Inc. in Natick, Mass.

However, work is under way in the ATM Forum on standard methods for ATM switches from different vendors to communicate and handle legacy LAN protocols. Once established, these standards will eventually enable ATM switches to perform firewalls (see glossary above) and handle broadcast storms and multicasting, which are all high-level router functions.

Once ATM is capable of performing

SWITCH WAY DID THEY GO?



Source: Zysk Research, Inc., April, 1995

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of Gumpah, Wisconsin,
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Reliability

Hubs and Routers

ROUTERS TOUTERS

Don't rule them out yet! Routers are hanging on because they can still perform several functions that switches cannot. Most of these capabilities are associated with Level 3 of the Open Systems Interconnection model and include the following:

1. Wide-area network access

Unquestionably, routers are still the only reliable means to connect to networks outside the campus environment. This will remain the case until standardized, affordable, public ATM services are offered by telecommunications providers, which is not expected for another couple of years.

2. Security firewalls

Part of the router's claim to fame is it can limit users' access to other areas of a network. Additionally, firewalls can isolate a workgroup's activity; so if something goes wrong in a network, the workgroup is shielded from the problem.

3. Multiprotocol support

Routers can handle any network protocol that may exist in the typical heterogeneous network, such as IP, IPX, SNA and AppleTalk (see Buyers' Satisfaction Scorecard, page 114).

Until ATM switches incorporate these functions, "we will not see ubiquitous ATM in the near future, and the router will still be there for all the diverse media we have," says David Meyer, senior network engineer at the University of Oregon in Eugene. The university now uses a variety

of switches from different vendors, including Cisco's LightStream 100 workgroup/campus ATM switches. And while the school is heavily involved in switching, Meyer says it's still buying the same number of routers and doesn't see that changing soon. — Stephen P. Klett Jr.

INTELLIGENT HUBS

There are three key buzz phrases for buyers looking at intelligent hubs in the next couple of years: Technology — watch for incremental gains; Investment protection — protect today's investments by buying products that can be upgraded when ATM hits the market; and Standards — make sure your vendors are active in standards development. These are tips from Paul Zganiowski, senior analyst of Computer Intelligence InfoCorp in Boston.

1. Technology

A few vendors have rolled out hubs that support either 100Mbit/sec. Ethernet or 100VG AnyLAN. But Zganiowski says many more vendors are developing products based on each standard. The jump to 100Mbit/sec. hubs should help users address a major concern. "For the most part, companies want their vendors to resolve their network bandwidth and congestion problems," Zganiowski says, noting that vendors offer switching and segmenting as solutions.

He adds that for the immediate future, 100Mbit/sec.

technology will be used primarily for faster backbones, while 100Mbit/sec. hubs are likely to be used for special applications such as imaging, computer-aided design and software development.

Beyond throughput, look for technology developments to focus on hubs supporting more flexible and powerful network management and redundant power supplies. Zganiowski doesn't expect major breakthroughs but sees continued improvement and broader availability of network management features and redundancy.

2. Investment protection

Hubs users will have to deal with future migration. Zganiowski advises buyers purchasing faster hubs to ensure that their vendors are positioning the products for a future ATM environment. Customers will continue to base their buying decisions in the next year or two on Ether-

net, Fiber Distributed Data Interface or Token Ring, but they can't ignore how ATM will fit in. They have to protect their investment, Zganiowski adds. Regarding ATM migration, he says, "Every major vendor has a strategy. All are viable; none can be proven wrong."

3. Standards

The diversity of ATM strategies plays into the issue of standards. "Vendors have to be talking about standards and how they are helping to create them," Zganiowski says.

One long-standing concern in internetworking — industry standard — may be alleviated for the next year or

so, he says. While major vendors are sure to firm up their standards for technology — through either acquisition or joint development — Zganiowski says he doesn't expect any of the major vendors to be acquired or to join.

— Jerome M. Connolly



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CONTINUED FROM PAGE 108

the above duties — vendors and analysts estimate it will take two to three years — ATM switches will begin to perform most of the tasks of routers in the campus environment. But it's important to note that the function of routing itself will remain, just in a different form.

"As long as you have networks with TCP/IP, IPX and AppleTalk applications, you'll have a need for routing; it will just be renamed and repackaged into switches via software," says Larry Lange, director of product marketing for ATM at Cisco in Santa Clara, Calif.

"... any time you think you've got it all figured out, you find you've just scratched the surface" — Virgil Palmer, Air Products and Chemicals

Unfortunately, this means the complexity of routing will never go away. And with ATM, switching generally promises to become more complex. "This may be a disappointment to users because they've been led to think that ATM will simplify things when the truth is we've simplified ATM up until now and there's nowhere to go but downhill," Nolle says.

For some users, at least, this comes as no surprise. "With any new technology, any time you think you've got it all figured out, you find you've just scratched the surface," says Virgil Palmer, manager of telecommunications research at Air Products and Chemicals in Allentown, Pa. The firm is currently testing ATM switches from Ungermann-Bass, Inc.

However, Palmer says he does see routing eventually being performed by switches in his network. He says, at the very least, "ATM will not be any more complicated than traditional router-based networks were." ■

— Jerome M. Connolly
is a freelance writer in Foster City, Calif.



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M&T White Innovation Leader





Routers work for remote users

Users on the most far-flung boundaries of the enterprise know the importance of reliable remote access

By Kevin Barden

Successful remote access requires the perfect meshing of PCs, applications and operating systems with remote-access-specific routers, software and servers. Therefore, vendors offering end-to-end systems have the best chance of delivering that "just-like-being-there" feeling, according to Paul Zagorski, senior analyst at Computer Intelligence InfoCorp in Boston.

Computerworld contracted First Market Research in Austin, Texas, to contact users of three vendors that offer end-to-end remote access systems: Cisco Systems Inc., 3Com Corp. and Shiva Corp. At least 50 users of each vendor were polled about their satisfaction with the products.

It's tough to make the wrong choice, judging by the overall performance grades. All proved to be very reliable with data transmission and protocol compatibility. However, when it comes to security and configuration management, Shiva users were polled about than Cisco and 3Com users.

Shiva's LanRiver line isn't necessarily better, just more focused, Zagorski explains. "Remote access is just one out of a full list of internetworking products for both 3Com and Cisco, where Shiva is dedicated to that only," he says. That dedication helped Shiva garner higher scores than 3Com and Cisco in four out of seven categories.

Choosing 3Com or Cisco means buying into a much larger network management scheme. Comments from users suggest the systems are very stable but too sophisticated if remote access is the only goal.

Reliability of data transmission

Looking at the single most important task of remote access routers doesn't make the choice any easier. At least 80% of users of each product said data transmission reliability was either good or very good. Such success with their most crucial function shouldn't be shocking.

Protocol compatibility

Each product also scored high in protocol compatibility, although Shiva does show an edge in the number of users who say compatibility is very good. Shiva's remote access prod-

Hubs and Routers

SCORECARD

Overall performance

	GOOD	VERY GOOD
Cisco	50%	38%
3Com	54%	24%
Shiva	52%	32%

Reliability of data transmission

	GOOD	VERY GOOD
Cisco	38%	44%
3Com	28%	54%
Shiva	32%	48%

Compatibility with LAN and WAN protocols

	GOOD	VERY GOOD
Cisco	34%	46%
3Com	40%	28%
Shiva	28%	52%

Quality of support

	GOOD	VERY GOOD
Cisco	28%	30%
3Com	34%	28%
Shiva	24%	24%

Responsiveness of service

	GOOD	VERY GOOD
Cisco	22%	28%
3Com	28%	20%
Shiva	24%	22%

Effectiveness of security

	GOOD	VERY GOOD
Cisco	20%	28%
3Com	30%	18%
Shiva	30%	40%

Value for the dollar

	GOOD	VERY GOOD
Cisco	30%	24%
3Com	40%	24%
Shiva	34%	34%

Configuration management

	GOOD	VERY GOOD
Cisco	52%	12%
3Com	38%	18%
Shiva	36%	36%

sets have been through more revisions than the others — they have tweaked and improved performance, so they work seamlessly," Zagorski says.

The product lines do support different protocols. Each supports all the major LAN protocols, but not all the WAN protocols. Each router had several users saying they needed to add WAN protocols beyond those with which they were equipped. Because the users indicated they went back to the same vendor for the extra protocols, there were no compatibility problems to speak of.

Service and support

Users rarely overlook service as an important feature of any product, particularly when networks and remote users are concerned. Although only about half the users of each product awarded favorable marks for their vendor's responsiveness and service quality, the grades were typically split evenly between good and very good. The scores indicate that each vendor can really shine at times.

Although Shiva had slightly fewer users awarding favorable marks than 3Com and Cisco, the difference isn't enough to say service is any worse. It's also not any better, despite Shiva's launching of many service programs a year ago.

Part of Shiva's problem, users note, is unless a service program is bought, users will be without support after the initial 90 days. "There isn't even basic support without having to purchase it," one user says.

Security

Shiva appears to have its security under control. More than three quarters of its users gave favorable marks, with 40% saying security was very good.

Shiva's security is much more flexible and fail-soft than the others, Zagorski says. "It has a variety of options for configuring devices." For instance, Release 3.5 supports TACACS, a protocol for authentication/communication between devices.

Shiva's software also has its own user-controlled passwords for those who want more protection beyond the network's security. "Users manage their own [LanRiver] passwords — the IS department doesn't have to be bothered," one Shiva user says.

Although half of 3Com and Cisco users said security was only average, many said they felt the dial-back features made their systems as secure as they needed.

Value for the dollar

These routers are cheap when compared with remote access alternatives. But few users say value is very good. "Considering the alternatives — buying an expensive PC with remote access software, for instance — I'm surprised the number saying 'very good' isn't higher," Zagorski says.

One possible reason value is not higher is that users are often forced to buy additional security and protocol support, Zagorski explains. "Some may feel they are getting nickel-and-dimed for a lot of things."

Cisco had the most users saying value was only fair. Although most said the routers were indeed worth the money, many also said "there are cheaper alternatives out there."

Configuration management

Users want control over the system's configuration but not so much that it becomes confusing. This is the trap both Cisco and 3Com fall into. Both garner respectable numbers of users who say configuration management is good, but only a few say it is very good.

Cisco had the most users awarding its Windows-based Configuration Builder was good. It also had the fewest saying it was very good. While many Cisco users commented favorably on its management proficiency, many also said it was confusing and difficult to use.

Shiva had the most users awarding its management software the highest grade. Shiva's Net Manager software comes as either a Windows or Macintosh-based application, and many users described it as "straightforward" and "simple" but with weak and uninformative documentation.

Barden is Computerworld's senior researcher. Firing Line Scorecard.

Critics have, after all, heaped over 30 awards on it.



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July 3	June 16	CW Guide To: PDAs Personal Digital Assistants, the latest evolution of microprocessor power in a small package, represent unique buying options and support issues for IS organizations. This Guide will examine the leading products and tasks IS has in selecting and managing them. Buyers' Satisfaction Scorecard: Market leading PDAs Firing Line: Newest PDA from a leading vendor	
July 10	June 23	Closer Look: Unisys	Search Study
July 17	June 30	CW Guide To: DBMS The focus of database management systems is as the server for a variety of applications. Depending on the application type, IS organizations face varied buying decisions. We will examine which databases each application needs best and analyze the leading products in each area. Buyers' Satisfaction Scorecard: Market leading SQL database mgmt. systems for midrange servers Firing Line: Latest DBMS from a leading vendor	
July 24	July 7	Closer Look: Power Macintosh	Enterprise Computing Chicago 7/26 - 8/28
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Aug. 7	June 28	Computerworld Client/Server Journal Vertical Market Focus: Insurance Section Feature: Product Focus on Networking	Object World Networks Expo Interop + Network Unix Expo Harvey Study
Aug. 14	July 21	Special Report: Re-engineering the Workplace	
Aug. 21	July 28	CW Guide To: Desktop Databases Personal databases that act as front ends to company applications and DBMS, as well as PC-based packages that serve the needs of workgroups or departments will be examined with the focus on IS buying decisions. Buyers' Satisfaction Scorecard: Market leading desktop databases Firing Line: Latest DBMS from a leading vendor	Object World San Francisco 8/15 - 8/17
Aug. 28	Aug. 4	Closer Look: Sun Workstations	
Aug. 28	Aug. 11	CW Guide To: Client/Server Financial Applications One of the first applications companies move off of the mainframe is financials. But only recently have the vendors begun producing true client/server offerings. We'll look at how users like them and what more they need. Buyers' Satisfaction Scorecard: Market leading client/server financial software Firing Line: Latest client/server financial software from a leading vendor	Search Study
Sept. 4	Aug. 18	Special Report: Annual Salary Survey	
Sept. 11	Aug. 25	CW Guide To: Internetworking Routers and Hubs Facing competition from many areas, routers and hubs will continue to consolidate and improve their services. How do these changes affect IS buying plans and what is the future internetworking product set? Buyers' Satisfaction Scorecard: Market leading hubs and routers Firing Line: Latest hub or router from a leading vendor Custom Publications: Object Application Awards Supplement	Networks Expo Dates 9/12 - 9/14 Search Study
Sept. 18	Sept. 1	Closer Look: Client/Server Manufacturing Software	
Sept. 25	Sept. 8	CW Guide To: ATM Switches ATM is becoming more widely installed and product offerings are multiplying. What are the benefits and costs of this new high-performance technology? Firing Line: Latest ATM software from a leading vendor Custom Publication: White Paper on <i>The Business Case for Client/Server</i> (part 3 of 4-part Enterprise Software Directions Series)	Interop + Network Atlanta 9/25 - 9/29 Unix Expo, New York City 9/26 - 9/28

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October - December, 1995

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Oct. 22	Sept. 22	Closer Look: Lotus Custom Publication: White Paper on Manufacturing Technology: Managing for Change (part 3 of 4-part Manufacturing Series)	Software Developers' Conference Washington, D.C. 10/3 - 10/7
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Oct. 8	Oct. 8	Closer Look: Contact Management Tools	
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Token Ring throws the switch

For Token Ring networks and switches, the rule of thumb has been "never the twain shall meet." That changed when Centillion Networks released Centillion 100 — the first switch to integrate ATM and Token Ring in the same box.



USER EVALUATIONS

This evaluation was based on interviews with four Centillion 100 users. All run Token Ring networks with at least 300 nodes. Users graded the products A through D, where "A" represents an excellent score and "D" represents a poor score.

Health care company 1	A
Advertising firm	A
Health care company 2	A
Nonprofit organization	B

By Kevin Burden

Overall performance

Because the replacement of bridges and routers with switches increases a network's bandwidth, evaluators weren't surprised by the network performance leaps when they installed Centillion 100, formerly called SpeedSwitch 100.

But the gains were so impressive that three users gave performance the highest possible score.

Users said installing Centillion 100 has reduced their dependence on bridges and routers, improved desktop performance and network reliability and allowed the m to build larger, flatter networks.

"Everything is better with [Centillion 100]," says Randy Kitehens, technical analyst at First Health, Inc. in Glen Allen, Va.

"We took the switch out one day, and there was such a clamor from our users — people dropping off the network, boards in the servers dropping off-line."

The servers on Kitehens' Token Ring network had reached a point of critical mass when he decided to install Centillion 100. He also continued to add users. The switch allowed Kitehens to add users without upgrading anything else, but removing it caused a catastrophe. "We were still debating whether to buy the switch," Kitehens says. "So when we pulled it out, we actually saw people disconnecting."

Evaluators also justified their high marks by noting what the switch doesn't deliver — discernible delays in network traffic flow. Users' early fears that an additional layer between clients and servers would cause delays ended up being unfounded. "The switch is essentially transparent," says Michael Kaunitz, director of networking at Donegan Data Systems, Inc. in New York. "Our testing on transfer rates before and after the switch was installed show no effect on traffic flow."

Health care company 1	B
Advertising firm	C
Health care company 2	C
Nonprofit organization	A

Installation

Part of the beauty of Centillion 100 is that it installs without many changes to existing environments. Evaluators said they plugged the switch into their network without changing any Token Ring adapters. One user said some cable needed to be upgraded before the switch worked correctly. But because the switch's proprietary SpeedView management software doesn't support Novell, Inc.'s IPX or TCP/IP, two evaluators said they wouldn't score installation any higher than a C. "We're a Novell shop, which means we had to search for and download drivers from the bulletin board," Kitehens says.

Software aside, evaluators marveled at the switch's stability when making changes while in operation. "We've pulled power supplies and cards out of the switch while it's live to make sure there is no single point of failure, and nothing happens," Kaunitz says.

Health care company 1	B
Advertising firm	B
Health care company 2	C
Nonprofit organization	A

Network management

Users have a choice for network management: Buy the Windows version of SpeedView or the Unix version, which runs in conjunction with Hewlett-Packard Co.'s OpenView or IBM's NetView/8000.

Users who evaluated both say the Windows tool isn't much more than a configuration utility for network monitoring. "On Windows, it won't let you change the configuration on the fly without resetting the switch," Kitehens says. The Unix version is a far more comprehensive tool that does a better job of gathering ongoing network statistics, he explains.

The ability to still use a LAN analyzer was all one evaluator needed to give network management an A grade. Tracking network traffic through a LAN analyzer is typically not possible in a switched network, but because Centillion 100 duplicates and copies traffic to a designated port, "our analyzer is still in use," says Harry Gentner, information services systems manager at the Baptist Foundation of Arizona in Phoenix.

Health care company 1	A
Advertising firm	A
Health care company 2	A
Nonprofit organization	A

Scalability

Each evaluator said their networks are bigger since they installed Centillion 100. Still, none have maxed out the switch, and their networks are faster. Evaluators said they are confident that the switch — whether one or multiple — will continue to play a role in their networks, whether they continue with Token Ring or move to ATM.

Up to six switching modules for Token Ring, ATM, Fiber Distributed Data Interface and, soon, Ethernet and full-duplexed Token Ring, can be plugged in to Centillion 100. "We're currently running three [Token Ring] modules, and we've tested it running a fourth and an ATM module without any performance degradation," Kaunitz says.

Health care company 1	B
Advertising firm	B
Health care company 2	A
Nonprofit organization	C

Value

Value for the dollar is not great, but it's not bad either, evaluators said. The \$1,800-per-port cost of Centillion 100 is cheaper than a \$2,000-per-port multiport bridge and considerably less than a \$5,000-per-port router. But when compared with \$1,200 per port for an Ethernet switch, the Centillion 100 has room for improvement.

Switching technology is new to Token Ring, and Centillion is currently the only game in town. Users are waiting to see if prices drop, as the Ethernet switch did, when more vendors enter the market.

The Centillion 100 base configuration sells for \$9,995, which includes the chassis, integrated ATM core and one Token-Speed module. But because Mountain View, Calif.-based Centillion was acquired by Bay Networks, Inc. last May, the switch can be bought to user specifications, which users applauded.



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In Depth

ARE YOU AN INTERNET ADDICT?

Take our quiz to find out how plugged in you really are!

By Maddi Hausmann Sojourner

THE QUIZ

1. When you run into an old friend, you exchange:

- Business cards
- Resumes
- Electronic-mail addresses
- Home page addresses

2. Your chief executive officer just saw a demonstration of the World Wide Web and wants it for the company. You:

- Tell him all he really needs is E-mail
- Point out that the company doesn't need the world when 85% of its sales are domestic
- Implement the prototype corporate Web site you wrote six months ago
- Ask if he wants a generic or proprietary server

3. You receive an E-mail message describing an 8-year-old boy in the UK who has a fatal disease and wants to collect the most business cards ever. You:

- Have your administrative assistant distribute hard copies to everyone in your area
- Delete it

4. Send your business card to the address listed

5. Send the alt.folklore.urban FAQ to the message sender, and demand a retraction

6. The Good Times Virus is:

- Herpes
- On America Online
- Triggered by downloading certain software
- A hoax

7. You are planning a camping trip this weekend and are concerned about the weather. You:

- Ask your colleagues if it's supposed to rain
- Watch The Weather Channel
- Read the weekend forecast in the newspaper
- Call up the National Oceanic and Atmospheric Administration satellite map at <http://gopher.cominfo.noaa.gov/>

8. You receive a voice message that one of your employees has been "spamming." You:

- Wonder when the distribution of meat products became politically incorrect
- Shut down with the employee, and find out how many newsgroups were involved
- Call back the complainant, and ask for documentation of the incident
- Group the newsgroup for evidence

9. Sufficient bandwidth for you is:

- 28.8K bps/mt
- Your own T1 connection
- Your own connection
- Your streetcar during a parade

10. Your chief operating officer asks what your department is doing to keep pornography off



the corporate system. You:
 a. Show her the list of excluded newsgroups
 b. Ask whether she received any complaints, and find out what she really wants
 c. Direct her to the Web site showing that a *7/05* article on the subject was based on a flawed study and that only 5% of Internet traffic is pornographic
 d. Give her the house plug you found on the back of the tape drive unit

11. Your favorite "not personality" is:
 a. Kiba
 b. Charles Berkley
 c. Peter G. Neumann
 d. Andre Agassi

12. You add new newsgroups to your corporate system based on:
 a. End-user requests
 b. Information systems staffer's recommendations
 c. Reading news.groups.misc
 d. Why would they need new ones?

13. The legal department asks for your policy on E-mail privacy. You:
 a. Ask them to make something up

b. Call other information technology managers, and do something similar to what they are doing
 c. Delete your copies of the torrid on-line romance you've been "monitoring"

d. Set up a packet sniffer to see if the legal department is monitoring you

14. What is the best way to show increased systems usage so your department looks good?
 a. Buy 1,000 more Lotus Development Corp. CC Mail licenses
 b. Put Doom on the network
 c. Add more Ethernet hubs and an additional T1 line
 d. Replace 1.2K bps/sec. modems with new, fast 2.4K bps/sec. models

15. The best way to reach you is by:
 a. Telephone
 b. Pager
 c. E-mail
 d. IRC

Answers Rejouzer is a staff technical writer at Comtrend Communications Corp. in San Jose, Calif. This is the former moderator of the rec.humor.Jerry.Weston group and can be reached at weston@rejouzer.com.

THE ANSWERS

Scoring: Give yourself the number of points listed for the answer you chose:

1. a.1	b.2	c.3	d.5
2. a.1	b.0	c.5	d.3
3. a.0	b.3	c.0	d.5
4. a.0	b.1	c.1	d.5
5. a.1	b.0	c.3	d.5
6. a.1	b.0	c.3	d.5
7. a.0	b.1	c.1	d.5
8. a.0	b.2	c.3	d.5
9. a.1	b.3	c.5	d.0
10. a.3	b.1	c.5	d.0
11. a.3	b.0	c.3	d.0
12. a.2	b.3	c.3	d.0
13. a.0	b.1	c.3	d.5
14. a.1	b.1	c.5	d.0
15. a.0	b.1	c.3	d.5

Interpreting your score:

0-15 *newtless.* Not only don't you understand the Internet, but you don't suspect it's important. You're confused by buzzwords and spend most of your time justifying why your budget should be spent on mainframe-related issues.

16-30 *not lightweights.* You know some buzzwords but probably couldn't explain them to the *"not loser."* You know enough to be dangerous because others think you understand connectivity. Fortunately, just your staff and a few power users in engineering are on to you.

31-50 *notetakers.* You know what you need to know and can find out what you don't. You feel comfortable enough to admit if an arcane point is beyond you because no one doubts your abilities. Your staff often asks you to explain concepts. Your only concern is that other department heads think you're a bit of a weakling. Ignore them — they're jealous.

Over 50 *not addit.* You spend too much time on-line and not enough time doing your job. You probably sent E-mail with embedded commands to managers, and they didn't appreciate it when it crashed their readers. People wonder why you rarely show up at meetings. You didn't notice your spouse moved away a year ago. If you lose your job, you'll be able to get something quickly because you're an *"addit."* If you did maintain an outside e-mail address for this eventuality, didn't you?

Definitions for "not lightweights
 • **not addit:** *not addit.* This question is for the *"not loser."* "Not" is a prefix that just won't die. An internet user would know the meaning of this little question. *Craig* is 14, the *"not loser."* is 16, and *"not lightweights"* is 30. *Craig* is a 100% removed. People respecting this nickname are not to be found. *"not lightweights"* demand that the reader use a retractive because it causes a lot of problems. This information is to be used in the *"not lightweights"* areas under *Previously Asked Questions* (FAQ).

• **Notetakers, DUXNet and PIR:** These Internet service providers that offer Internet access for a fee.

• **IPTP:** Peer-to-peer protocol.

• **Group the newsgroup, "Grop":** is a Usenet command that groups the newsgroup into a single file for a certain purpose. The newsgroup (actually the "news sport") is a collection of news articles posted to your network. The "Grop" command is used to gather or group everything in the newsgroup for the naughty articles because he figures this is faster (and easier) than reading to the people involved.

• **Killer James "Kiba":** Perry is a "not star because he doesn't read every posting of the news on-line.

• **IRC: Internet Relay Chat:** This is the experiment of what chat rooms on-line servers or forums are. This implies the net addit is on-line to it.



AT ANY MOMENT, SOME TECHNICIAN

SOMEWHERE, IS TROUBLESHOOTING

SOME COMPUTER OR PERIPHERAL, AND

OTHERWHERE, THE CALLER IS WAITING

FOR SUPPORT OR REPAIR.

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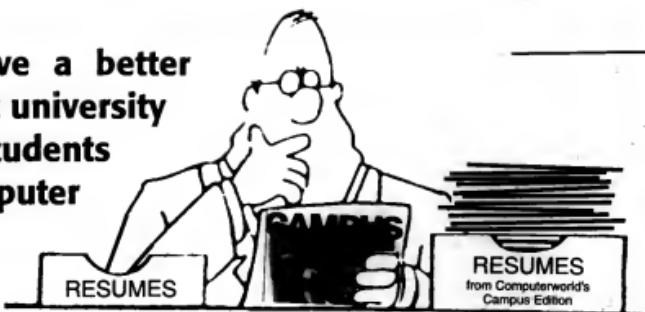
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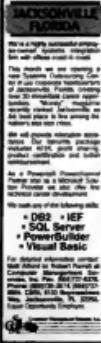
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12:15 p.m. - 2:00 p.m.	The Top 10 Trends Affecting Information Systems Careers
2:10 p.m. - 3:05 p.m.	Repeat of Concurrent Sessions
3:20 p.m. - 5:00 p.m.	Town Hall Forum
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Learn the latest in how to pick the right people from Dr. William Swan, a nationally recognized expert in interviewing and performance appraisal. Dr. Swan conducts interview selection seminars and workshops for major corporations and government agencies, and has personally trained over 25,000 managers to conduct more effective interviews.

THE TOP 10 TRENDS AFFECTING INFORMATION SYSTEMS CAREERS

12:15-2:00 p.m.

Luncheon/Keynote Address

Paul Gillin, Executive Editor, Computerworld

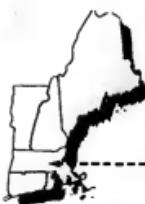
Sure, there are new skills entering the market every day, but what are the top 10 trends you should really keep an eye on?

Paul Gillin, one of the country's leading watchers of the Information Systems profession will give you an up-to-the-minute view in this very special keynote address.

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LIFE CYCLES: short, sweet

Service and support contracts help keep router and hub life cycle costs down by minimizing software upgrade fees

By Lynn Haber

If you buy it, how long can you expect to own it, and at what cost?

Many information systems managers are realistic about product life cycles: They know they're short. "I expect to replace my routers in three years," says Henry Kanarek, vice president of data systems at Mather Terminal, Inc. in Millburn, N.J. The company has 16 routers in its internetwork, and Kanarek says he expects to make little additional investment during that three-year life cycle.

In fact, three years seems to be the life expectancy for both high-end backbone routers and low-end access routers. Consider the costs: For more expensive, high-end backbone routers such as those from Bay Networks, Inc. in Santa Clara, Calif., costs include \$24,000 for a base unit chassis, \$10,000 to \$30,000 for interface cards, \$7,000 to \$8,400 for annual maintenance for a unit with one to four cards, \$1,000 for a memory upgrade of between 8M bytes and 16M bytes of RAM, and \$7,500 for a processor upgrade.

Processor or memory upgrades are rare and depend on a user's applications, says Mick Sculley, vice president of product management at Bay. The addition of interface cards is more common.

For low-end access routers, costs include \$2,195 to \$3,495 for the initial product, depending on the software feature

set; \$580 for annual maintenance; \$245 a year for telephone support; and \$850 a year for the on-site service contract. Hardware on access routers isn't upgradable, but the service contract includes software upgrades.

On a per-unit basis, IS departments' life cycle costs for access router devices tend to be lower than those of their backbone counterparts. However, expenditures for both router types are probably equal once all costs are taken into account.

"Both sites for router deployment involve risk and concern for the IS department," says Tom Pincince, senior ana-

Router ownership				
YEAR	1	2	3	4
Hardware and software	\$750	\$750	\$750	\$0
Maintenance** and contract	\$400	\$400	\$400	\$400

list at Forrester Research, Inc. in Cambridge, Mass. At the periphery of the network, IS managers must deal with size and complexity, whereas at the network core router technology is more likely to be upgraded.

The ability to upgrade and expand are among the factors that affect the life cycles of routers. With routers, the addition of new interfaces such as Fiber Distributed Data Interface, 100M bits/sec. Ethernet and frame relay are important, as is the ability to upgrade management software.

Software upgrades included

At a minimum, vendors introduce new router software versions and management upgrades each year. And routers often require memory upgrades.

However, vendors often recommend that hardware upgrades be made at the time of purchase. Making such changes later results in higher cost to the IS organization because of system downtime and the need to pull staff to do it. Over time, vendor service and support contracts help minimize software upgrade costs and keep overall product life cycle costs down. Basic support contracts include all software upgrades.

In the case of hubs, IS departments tend to hang on to them longer than routers—a total of five to seven years. "I consider the hub a passive device and don't expect it to change much over time," Kanarek says. Consequently, he says, he doesn't expect to reinvest in hub technology for many years but does expect to upgrade.

In fact, Peter Tarrant, vice president of product management at Bay says the company's 3,000 ethernet hubs products have been around for six years because users can upgrade product performance and management features. "At

the same time, the price per port has come down 50% over the past six years," he adds.

Moreover, Cabletron Systems, Inc. in Rochester, N.H., engineers its products for a 10-year life cycle, says Trent Waterhouse, product marketing manager. But he says most customers keep hub products in service for five to seven years.

Organizations routinely upgrade their networks and can expect to pay varying costs for upgrades at the hub.

These can include \$1,000 for switching

Life cycles

services and \$2,000 for routing services; Waterhouse says. Workgroup-oriented stackable hub products tend to have a shorter life cycle, with new products introduced every two years.

Stackable hubs, which cost about half the price per port of chassis-type products, tend to have fixed configurations and are less flexible. This limits the product life cycle and costs.

However, as a whole, the market is swinging toward stackable hub products with more than 50% of ports shipped this year in the stackable space, according to Dataquest, Inc. in San Jose, Calif. Industry watchers say they expect that number to jump to more than 60% next year.

But whether you're talking about routers or hubs, up-front costs represent the smaller portion of total investment during the product's life cycle. Ongoing service, support and systems management cost significantly more. *

Haber is a freelance writer in Boston.

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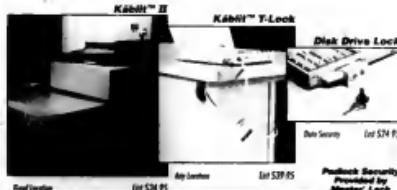
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RFP 2003 due Tuesday, October 24, 1989, at 2:00 P.M. for the acquisition of consulting services for the purpose of developing, establishing, and implementing a Transportation Management Information System (TMIS) and for providing a period of onsite post-installation support of that TMIS for the Mississippi Department of Transportation. \$25.00 Charge. A minimum bidder's bid must be received by 2:00 P.M. on Tuesday, October 24, 1989. A minimum bidder's proposal must be received by 1:00 P.M. on Wednesday, September 27, 1989, in the First Floor Auditorium of the MDOT Administration Building, 401 North West Street, Jackson, MS. For additional information, please contact Richard D'Wane at (662) 320-7448.

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Much like the high-technology stocks that have received loads of attention from Wall Street, start-up technology firms trying to get a leg up in the market received lots of money from venture capitalists in the first half of 1995.

According to Coopers & Lybrand in New York, venture capitalists invested \$2.8 billion in U.S. companies during the first half of 1986, with about \$850 million of that going into the high-technology sector. The Internet, in particular, continued to attract dollars, said Larry Bischelmann, manager of Coopers & Lybrand's High Technology Group.

"Everything is leading to the Internet," he said, though not necessarily for access providers. Instead, venture capitalists are looking at firewalls and security measures — "stuff you can get your hands on," Buehnsbom added. "Between that and wireless, there is a lot of [investment] activity."

A national venture capital report from Price Waterhouse noted that backing of initial public offerings on Wall Street and a number of buyouts of beleaguered companies helped bump up the total investment dollars. The report went on to note that California-based companies received the most money (\$56.8 million), with New England start-ups in second place. The opposite was true on the investor side-ups. New England-based venture capital firms invested more (\$274 mil-

Buchsbaum added that the quality of deals, especially for start-ups, is also up. "It is not just the huge deals getting done, but there are a lot of early stage deals for smaller companies," he said. — Tim Quellette and Stewart Deck

A helping hand

The three largest venture capital deals for high-technology companies made in the last year:

Company	Area	Amount	Stage of development
CDM Inc., Mountain View, Calif.	Communications	\$7.3M	Early
Software Quality Automation, Woburn, Mass.	Software	\$4.5M	Expansion of business
Starwave Technologies, Austin, Texas	Software	\$4.4M	Expansion of business

卷二 人物志

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*Patrick McCullough, Vice President,
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TI enters portables arena with aggressive offerings

By Mindy Blodgett

Seeking mind share in the increasingly crowded notebook market, Texas Instruments, Inc. in Dallas this week announced an aggressively priced line of portable computers.

The Exensa family, priced from \$1,799 to \$3,599, is aimed at the consumer and retail markets. But industry observers say the notebooks' modularity could raise the company's profile in the corporate market as well.

"For what you are getting, you are paying a pretty good price," said Randy Giusto, an analyst at International Data Corp. in Framingham, Mass. "They are definitely hitting some pretty aggressive price points with



good features. And they are going to play up the company's brand-name recognition."

The Exensa line ranges from the 450/450T with a 75-MHz Intel Corp. DX4 processor to the 550/CD/550CD/DT with a 75-MHz Pentium processor and modular CD-ROM drive.

The 5-pound 450/450T has 4M bytes of RAM and a 10.4-in. dual-scan screen or a 9.4-in. thin film transistor (TFT) color screen. The dual-scan notebook costs \$1,799, and the TFT-screen notebook costs \$2,299.

The 550/CD/550CD/DT has 8M bytes of RAM and a 10.4-in. dual-scan screen or a 10.4-in. TFT color screen. It weighs 6.4 pounds and costs \$3,599 for the dual-scan screen and \$3,399 for the TFT screen.

Senior writer Jakkundri Vi Japan contributed to this report.

StorageTek Kodiak

CONTINUED FROM PAGE 1

"too many products," said Larry Duntz, assistant manager of computer services at Beech Aircraft Corp. in Wichita, Kan. "It [Kodiak] is lower cost and higher performance than iceberg, it's a little hard for me to understand why we need iceberg."

Some users aren't so puzzled, however. Almo Reut A/C Inc. in Fort Lauderdale, Fla., will announce a new ThinkPad 700 line next month with a 90-MHz chip and that a planned notebook announcement based on the 120-MHz chip has been delayed. Compaq Computer Corp. officials said that a new LTE Elite 5000 notebook series will be announced next month with 75- and 90-MHz chips and that announcements based on faster chips are forthcoming.

Users, meanwhile, are anxious for faster notebooks. "I am starting to believe that you can't get enough power or speed," Lease said. Kodiak, which lacks this feature, will hopefully run faster in applications "where you don't care about the data 20 minutes after you put it on a disk."

Mainframe arrays typically cost \$2.50 to \$3 per megabyte, said Robert Colley, an analyst at International Data Corp. in Framingham, Mass. Because of iceberg's sophistication, StorageTek may try to charge more for it than for Kodiak, "but there can't be much of a difference," he added.

"They're going to have to get down and dirty" with Kodiak and iceberg pricing, Pattison said. "We're iceberg kind of people, but StorageTek will have to be price-competitive [on each array], or they're just not going to sell . . ."

StorageTek officials said in July that Kodiak had started beta testing at a handful of customer sites. General availability is expected to start next month, although sources said export for IBM's Exensa fiber-optic interconnect may not be ready until later this year.

Source: StorageTek and industry analysts

Beech has 3000 bytes of iceberg storage in place. StorageTek executives tried to explain the positioning of the two products to Duntz, "but they haven't done that very well," he said. "I'm hoping I'm going to learn an awful lot at" StorageTek's user group meeting the first week of October. Kodiak is expected to debut there.

StorageTek is the first mainframe array vendor to offer two distinct RAID devices side by side. Whether the company can make sense of that juxtaposition to customers "is a valid question," said Wayne Pattison, director of data center operations at Kansas City Southern Railway Co. in Missouri.

A spokesman for StorageTek in Louisville, Colo., declined to comment on how Kodiak will mesh with iceberg or pricing of the two arrays.

Are you concerned about StorageTek's ability to continue developing two mainframe RAID architectures? Do you understand how iceberg and Kodiak fit together strategically? Sound off at us@talkback@cw.com. Please include your full name. We'll publish a sampling of reader opinions in an upcoming issue.



Talkback@cw.com

Intel fights

CONTINUED FROM PAGE 1

With the announcement, Intel may have avoided a major public relations disaster, much like last year's debacle surrounding the discovery of a flaw in the Pentium chip. That problem and Intel's initial handling of the issue rocked the company for months.

Meanwhile, notebook vendors intent on using the 120-MHz chip have put the brakes on temporarily. A Toshiba spokeswoman confirmed that the firm has postponed a notebook announcement it was scheduled to make this month.

She wouldn't confirm reports from sources who said a new high-end notebook model will be based on the chip and replace its Texas series. The delay was due to "a problem on Intel's side, not ours," she added.

Speedy models

An IBM spokesman said the PC Co. will announce a new ThinkPad 700 line next month with a 90-MHz chip and that a planned notebook announcement based on the 120-MHz chip has been delayed. Compaq Computer Corp. officials said that a new LTE Elite 5000 notebook series will be announced next month with 75- and 90-MHz chips and that announcements based on faster chips are forthcoming.

Users, meanwhile, are anxious for faster notebooks.

"I am starting to believe that you can't get enough power or speed,"

Just 11 items

to have a 12.1-in. size. The monitor display is the first ThinkPad to feature a wide screen. Other features include the following:

- 90-MHz Pentium processor now; 120-MHz Pentium processor to be announced
- 17.5-in. screen
- Built-in 2.8K microphone, modem with speakerphone and Modem
- Price between \$7,000 and \$10,000

said Kevin Danzey, systems manager at Millipore Corp., a water filter manufacturer in Bedford, Mass. Danzey oversees a 400-strong mobile sales force using various notebooks.

"Everything we buy is Pentium, and I think a 120-MHz chip would be great," he said.

The chips are based on Intel's Voltage Reduction Technology, which allows for a standard 3.3V system interface with a battery-saving 2.0V inner core. The technology lets mobile vendors easily integrate Intel's mobile Pentium chips into existing designs.

The problem with the 120-MHz chip is caused by what Intel describes as the chip's "design sensitivity to low-voltage operations," causing it to stop working at 2.0V.

Intel last week said it has already implemented "a minor design modification that will allow the chip to function properly in low-voltage operations."

Reiswig pulled from OS/2 to steer software strategy

By Lisa Piasecki

OS/2's "Blue Ninja" is hanging up his up.

IBM last week launched a shakeup of its desktop software unit by transferring its top OS/2 executive — Reiswig — out of the line of fire and appointing him general manager of technical strategy for IBM's Software Group.

In his new role, Reiswig will serve as an adviser to John M. Thompson, who oversees all of IBM's software. Reiswig, a 25-year IBM veteran, will be responsible for software architecture, strategy and standards and new business development for IBM's entire software group.

Reiswig earned the nickname "the Blue Ninja" because of his evangelistic approach to what some observers claim has been the unsuccessful marketing and development of OS/2 since 1990. He

had been general manager of IBM's Personal Software Products Division since its inception in 1990.

Taking the OS/2 helm will be John W. Thompson, who was previously general manager of marketing and solution developer programs for IBM's Software Group. Both will now report directly to John M. Thompson, senior vice president of the Software Group.

Although IBM touted Reiswig's move as a well-deserved promotion, some engineers and programmers at IBM's OS/2 Boca Raton, Fla., development facility said the executive shuffle was a way to gracefully ease Reiswig toward his 30th anniversary.

A spokeswoman for the Personal Software Products division defended that the move paves the way for Reiswig's retirement. She claimed OS/2 is a successful product and remains the cornerstone of IBM's overall software strategy.

The Back Page

Power users happily go to pieces with Ethernet

Workstation and PC power users keep upping the ante on the number of megabits of bandwidth they need from the network. Where once they may have worked with a few spreadsheet cells, they now analyze and display reams of data in three dimensions or construct complex documents for sharing with other workers.

Just where the increasing amount of bandwidth is going to come from isn't clear. If Ethernet is one of the standard pipelines for end-user networking, its 100Mbit/sec. limitation starts to choke as soon as multiple users generate traffic.

Some experts advocate moving to higher capacity transmission schemes such as FDDI or ATM. But such a move outdoes much of the LAN's equipment, and the cost per connection remains unrealistically high. Another possibility was outlined recently by Jim Vogt, director of hub systems at Bay Networks in Santa Clara, Calif.

Vogt says many of his customers continue to rely on Ethernet, but instead of trying to bring more and more sophisticated management to heavy traffic, they simply increase the number of segments. Where they had 30 or 40 users per segment a year ago, they now have 10 to 20, Vogt says. He adds, "Our network

administrator who is planning for Ethernet segments of only seven users," and his ultimate goal is three."

The lower the number of users, the more likely that a 10Mbit/sec. pipeline will be enough. And the relatively low cost per port of Ethernet hubs makes it feasible to throw out more segments.

And, of course, Ethernet remains acceptable on another score. An increasing number of hubs can be quickly reconfigured into "fast" Ethernet devices to jump the available bandwidth to 100Mbit/sec.

Look for Information Builders (IBI) in New York to launch an on-line application processing (OLAP) engine called Fusion sometime near the end of the year. Fusion would compete with products from OLAP suppliers such as Comshare in Ann Arbor, Mich., and smaller players such as Arbor Software in Sunnyvale, Calif., Pilot Software in Cambridge, Mass., and IBM Software, which was recently acquired by Oracle in Walnut Creek, Calif.

Both OLAP and on-line transaction processing (OLTP) require ready access to data that is freshly loaded into the database. They differ in that a particular type of OLTP transaction always uses the same data structures, while OLAP commands slice diverse data in an ad hoc, quick-response basis.

Decision-support systems or executive information systems try to do something similar but with more restricted, predictable data sets. OLAP adds dimensional data, bringing additional views to bear on the flattened, two-dimensional tables.

IBI's David Sandel, formerly a vice president at Unix International and now director of IBI's Unix division, didn't exactly spill the beans when talking about Fusion but did assert that IBI's focus and other products "are very good at doing large-scale scans" and are designed to take advantage of symmetrical and parallel processing architectures.

Although IBI is not a name befitting in every household, it has enjoyed steady, quiet growth and will pull in more than \$300 million in revenue this year. It is one of the few large software companies to remain privately held. It is possibly best known today for its Enterprise Data Access (EDA), a portable layer of database and network interfaces that let it extract data from more than 60 commercial database systems. And that al-

ludes one reason Fusion might bring some new muscle to the OLAP market.

Stephen Chen, at one time a protege of Seymour Cray when both were at Cray Research, has started his own company, Chen Systems in Eau Claire, Wis., where he hopes to launch a line of highly scalable servers. They will be based on Pentium processors and will start small, going up to eight processors initially. But he intends to build up to high-end servers us-

ing multiprocessor, symmetric multiprocessing nodes arranged in parallel.

Chen's expertise as the designer of the Cray Y-MP series may pay off with new, parallel designs based on Intel's low-cost, four-way Pentium boards. "I don't talk about scalability," Chen said in a recent interview. "I have to prove myself with eight [before proceeding to larger designs]."

Barbuck is Computerworld's technical editor. His internet address is charles_babcock@cs.com.

Inside Lines

Sharpening that Big Blue ax

Jerome York, chairman and the chief financial officer of IBM's G. Richard Thomas last week, sources say, "Big Blue" is getting ready to launch its latest round of staff cuts. In the New York, N.Y., computing giant tries to close a gap between its projected annual-cost savings initiative (\$8 billion) and the actual figure (\$6.5 billion). IBM's trade show and corporate communications staffers are at the top of the executive list, with the Atlanta office rumored to be facing the harshest blow.

Forget no nukes; it's no nudes

The Big 3 on-line services — America Online, CompuServe and Prodigy — along with IBM, Microsoft, Apple, Syntexis, Netshare and other technology organizations, plan to announce an alliance today to build software that lets on-line users filter what they download. The group plans to release a free product, Platform for Internet Content Selection, or PICS, early next year. PICS would include labeling guidelines that content providers and other groups could rate the text, images and other data they upload to the net.

Soak up this SAP

SAP AG this week will announce that its suite of R/3 client/server software will support IBM's AS/400. News of the partnership comes a week before SAP is due to officially take the wraps off R/3 Release 3.0 at its annual user conference in Phoenix beginning Sept. 18. Meanwhile, Alex Ott, SAP's executive vice president, predicts the supply of trained SAP consultants should ease out with demand by early next year. By the end of this year, SAP will have 5,500 R/3 applica-

tions consultants on the job. Hundreds more SAP professionals are being turned out by various integrators. This, Ott said, "will drive down the rates of consultants, which are ridiculous."

Attempting simple printing

A vendor alliance launching this week seeks to develop a printer management architecture that simplifies the task of printing throughout heterogeneous networks. Digital, Sunsoft and Xerox plan to embed enterprise control in Unix operating systems and later in NetWare versions. The \$40 million effort includes application programming interfaces that other vendors can tap into to provide uniform print services in mixed networks.

Pretty far along

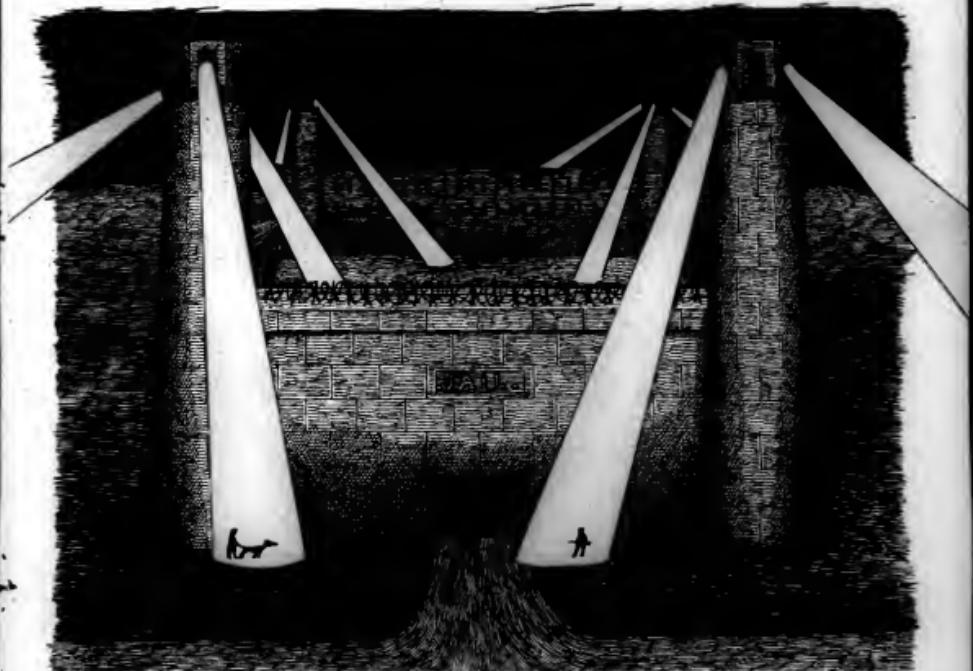
Paragon Computing, best known for PC and Macintosh-based networking gear, is expected to announce next week an Internet portal that includes its product and licensing deals to resell Internet browsers from Netscape and Microsoft, a source close to Paragon said. Also part of the plan is a Paragon product called Netopia, which combines an ISDN router and software for net access. The goal is to give IS staffs a single stop for building end-user access to the Internet and Web. Pricing was not available.

The Virgin Mary takes lesson from David Letterman. ... If Eltris has a Web page, you know the Virgin Mary couldn't be far behind. The Mary Page, run by the Marian Library of the University of Dayton,

includes a Top 10 list of the most FAQs about Mary. They include "Who are Mary's parents?" (anne and joachim), "Why does Mary always wear light blue?" (She doesn't. Red has also become a prominent color for Mary.) Get religion at <http://www.udaption.edu/mary>. Or call Computerworld for guidance at our 24-hour voice-mail tip line at (800) 829-8555 or our toll-free number of (800) 343-6474. News editor Marylyn Johnson can be reached by phone at (800) 829-8179 or via the Internet at mjjohnson@ew.com.

The 5th Wave by Rich Tennant





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